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American Forests

Editor
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THE AMERICAN FORESTRY ASSOCIATION

919 Seventeenth Street
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The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of two magazines — AMERICAN FORESTS and CONSERVATION, both designed to keep before the people of the country important conservation questions and issues, the Association carries on educational programs in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. All its resources and income are devoted to the advancement of conservation in the interests of public welfare. All citizens are welcomed to membership.

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THE AMERICAN FORESTRY ASSOCIATION

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Who's Who

Among the Authors in this Issue

CLIFFORD C. SPENCER (*Bighorns On The March*), of Colorado Springs, Colorado, was reared in Northwestern Wyoming, in Buffalo Bill's country, where his father was in the dude ranch business, and early acquired an active and practical interest in conservation. Upon graduation from college, he entered the U. S. Forest Service, then left to serve overseas in World War I. Returning to the Service, he was transferred to the Western National Forests in Wyoming and Colorado, where he made an intensive



Clifford C. Spencer

study of the bighorn sheep. At present he is doing wildlife and range management work on the Pike National Forest in Colorado, and chasing his hobby of wildlife photography on the side.

GRACE V. SHARRITT (*Nature's Pocketfull of Pills*), author and nature lover, writes from Detroit—chiefly about the outdoors—in her own original and inspiring fashion. Her work is now appearing regularly in the better known magazines and papers.

MARK HANNA (*Gosh! It's Wonderful!*), now freelancing from California, also does narration shorts for the motion pictures. A public relations and information specialist, he was formerly ranger-naturalist at the Grand Canyon National Park, where he learned—and told thousands of visitors just how "wonderful" it is.



Mark Hanna

HORACE DONALD CRAWFORD (*Canada's Pulpwood Backs the Allies*), free lance writer from Indiana, specialized in journalism at the University of Michigan. He worked for several years on the Indianapolis News and later directed the Department of Journalism at Franklin College in Indiana. Leaving Franklin to freelance, he traveled widely in Europe and Canada, and has written a series of spe-

cial articles on Canadian-American relations, with particular reference to forests and forest economics.

BERTHA O. KLUG

(*Colorado — Floral Melting-Pot of America*) says she was "nurtured and spoiled by three republics—Switzerland, France and America." Her childhood was spent in France, where she grew to know and love the forests and first dipped into botany. Busy years of study in New York followed,—voice, art, drama—then marriage and a long interval of motherhood and ideal home life until her husband's death, when she went to the mountains of Colorado, there to live "in a wee Scotch cottage, with my dog Capi, my old editions and my antiques . . . hoping to scribble to the end of my days in beautiful old Cheyenne Canon."



Bertha O. Klug

ROSS L. HOLMAN (*Youth, Trees and Game*), farm editor, was reared on a farm, operated his own in Tennessee for ten years, and has always been interested in the development of agriculture and the work of young folks in that field. He now devotes his time entirely to writing and directing agricultural publicity, contributing to many magazines and papers.



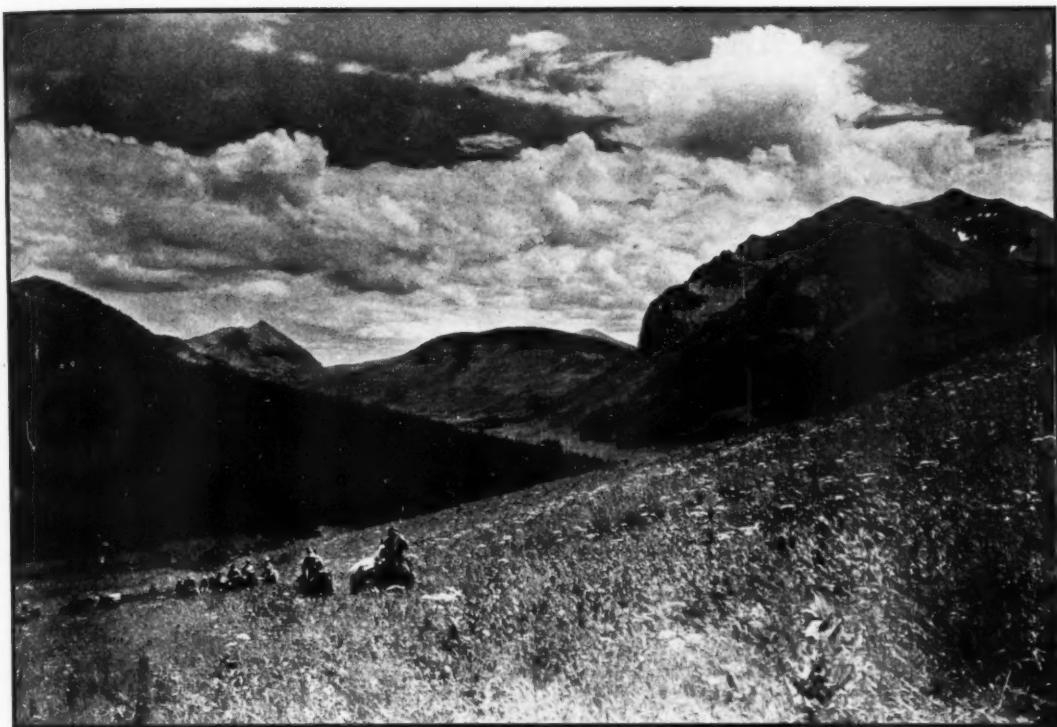
Ross L. Holman

G. H. COLLINGWOOD (*Horsechestnut*), former Forester of The American Forestry Association, is now associated with the National Lumber Manufacturers at Washington, D. C., in the same capacity.

P. P. PIRONE (*Wartime Spraying Practices*) is professor of forestry in the Division of Plant Pathology at Rutgers, and regularly conducts the Shade Tree Department in this magazine.

THE COVER—*A'Wing for Victory!*
Official United States Army Air Corps Photograph.

WE NEED THE TONIC OF THE WILDERNESS



Trail Riders in the Majestic Maroon Bells-Snowmass Wilderness of Colorado

In the belief that an opportunity for many to vacation briefly this summer in the unspoiled wilderness is in the interest of national health and national morale, The American Forestry Association is organizing seven expeditions of Trail Riders of the Wilderness. These trips, as listed below, are open to everyone who loves the wilderness.

- June 16 to June 27—Great Smoky Mountains, North Carolina. \$128 from Asheville
- July 8 to July 18—Bob Marshall Wilderness, Montana. \$130 from Missoula
- July 20 to July 31—Sawtooth Wilderness, Idaho. \$142 from Sun Valley
- July 29 to August 7—San Juan Wilderness, Colorado. \$138 from Durango
- July 29 to August 8—Gila Wilderness, New Mexico. \$115 from Silver City
- August 5 to August 15—Snowmass Wilderness, Colorado. \$133 from Glenwood Springs
- August 24 to September 3—Sequoia Wilderness, California. \$140 from Mineral King

All expeditions are carefully organized with experienced guides, packers, wranglers and cooks. A physician is with each party; so is a representative of The American Forestry Association. Nearly six hundred men and women have participated in forty-three expeditions since 1933. So make this your year to ride with the Trail Riders of the Wilderness—rebuild mentally and physically for the important days ahead. Write for reservations and detailed information.

THE AMERICAN FORESTRY ASSOCIATION

919 Seventeenth Street, N. W.

Washington, D. C.

BIG TREES



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The American Forestry Association is sponsoring a national hunt for the discovery and preservation of the largest specimens of the different species of typical American trees. Locate, measure and nominate your candidate in this competition. ACT NOW to make known and save the largest specimens of America's trees. For further details, send for the Association's special announcement of this Big Tree hunt. Mail your nomination with records and pictures to The American Forestry Association, 919 17th Street, Northwest, Washington, D. C.

NEW PONDEROSA PINE KING

A NEW champion has been crowned in the battle of the ponderosa pines for the honor of being the largest of its species. The new king, located in Oregon on the east bank of the Deschutes River, six miles downstream from the headquarters of the Pringle Falls Forest Experiment Station near Lapine, has a diameter of 103.5 inches, or circumference of twenty-seven feet, one inch, at four and a half feet above the ground. It is 162 feet high.

According to Donald F. Mc Kay of the United States Forest Service, Portland, Oregon, who nominated the tree, it has been growing at a rapid, nearly uniform, rate for the last 140 years and continues to grow an inch or more each ten years. Increment cores taken on the west and east sides of the giant indicate the latest fire to strike it occurred in the summer of 1878 and slowed up the growth for a period of but three years.

AMERICAN FORESTS



The EDITOR'S LOG

IN THE *Milwaukee Journal* of April 14 appeared an editorial which warrants comment here — first, because it misrepresents the views of the editor of this Log, and second, it uses this misrepresentation as a peg upon which to hang propaganda for public regulation now of all owners of forest-bearing lands. The *Milwaukee Journal*, of course, is free to continue the thirty year controversy over public regulation if it thinks it makes for national unity and helps to win the war; but when in doing so the paper resorts to misrepresentation of others, it is quite another matter.

The Milwaukee writer referring to "The Editor's Log" of March says: "Mr. Butler seems to welcome an uncontrolled harvest of the American timber crop." In support of this representation, he quotes from "The Editor's Log" to this extent: "As patriotic and realistic Americans behind the lines, ours is not the part to sound now the alarm of possible forest deficits growing out of war wood needs, or supinely to wring our hands and cry 'woodman, spare that tree'. Ours rather is the fighting part to help by every means at our command to keep our trees backing up our armed forces . . ."

Intellectual honesty would have completed the second sentence. In full it read as follows: "Ours rather is the fighting part to help by every means at our command to keep our trees backing up our armed forces — five trees to a man or ten if necessary — *by guarding well their forest homes, the forest industries and workers and the supply lines of wood to factories and battle fronts.*"

Does a plea to guard well our forests sound like advocacy of a harvest of waste, which the editorial goes on to lay at the writer's door? If it does, the English language suddenly has gone into reverse meaning. By resort to deletion, however, the Milwaukee writer sought to justify that interpretation to his readers — an interpretation that is about as deranged and far-fetched as would be an attempt to represent the President of the United States as welcoming a reign of uncontrolled murder because he did not mention the Fifth Commandment in his recent address to the nation, when he paid tribute to the deeds of our armed forces and called upon those of us behind the lines to back them up.

The intent of the Milwaukee editor to provide propaganda fodder appears further revealed by the fact that after publication his editorial was reproduced by photostat alongside an article from another paper calling for public control of all forests and it has since been given distribution throughout the country. The distributors of this "White Paper" lacked the forthrightness to identify themselves by any mark, sign or symbol.

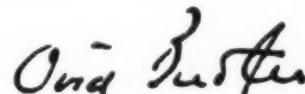
These are days, it is becoming increasingly clear, when one's words — and lack of words — are in danger of sabotage. The editor therefore wishes to supplement what he said in the April number with what he wrote — just after Pearl Harbor — in the January number of *AMERICAN FORESTS* regarding the part of conservation and trees in this war.

"As a symbol of preserving for the good of all, conservation has come to a great test — the test of ability to put first things first quickly as exigencies of the day may dictate, to knife out traditional ingrownness, to set aside small controversies, to postpone cherished projects that can wait, and to make as its supreme and compelling FIRST the winning of this war.

"Whether victory be quick or slow in coming, we know that back of every battle to the very last we shall need our forests. And we know that after that we shall continue to need them for building of the peace.

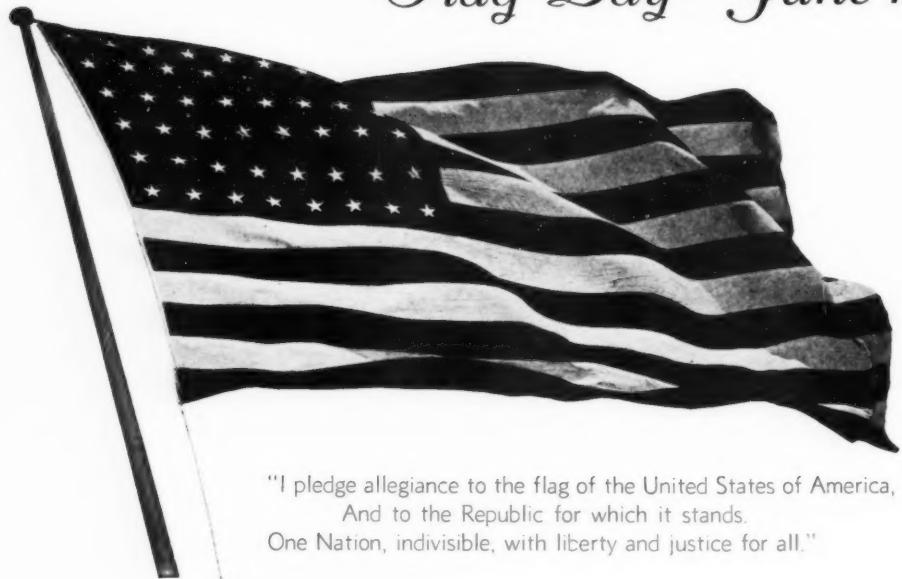
"As this is written, men are guarding vital railways, bridges, factories, cities. That same spirit of guardianship must be aroused in our people for our forests. Here is a conservation FIRST that goes all the way through — a task vital to the hour because it is vital to the winning of the war and to the winning of the peace."

And lest the word "guardianship" be again deleted or otherwise strafed, the editor wishes to add that to him the word as applied to natural resources means protection against all forms of unnecessary, wasteful or destructive use. This goes for forests, their care, harvesting and utilization. It goes for all natural resources — trees, soil, wildlife, minerals, range plants, wild flowers, water. It goes for resources privately owned and for resources publicly owned — state and national forests, parks, monuments, wildlife refuges, nature and scenic sanctuaries. With special reference to forests, it means protection against waste by man, fire, fungus, beetles and other forms of wood-working insects.



Ora Butler

Flag Day—June 14th



"I pledge allegiance to the flag of the United States of America,
And to the Republic for which it stands.
One Nation, indivisible, with liberty and justice for all."



Let us pledge also to keep our flag waving over a land of green trees by PREVENTING FOREST FIRES. Be alert every hour of the day and night—like the men on the forest lookouts!

ON THE FOREST FIRE FRONT

HANDICAPPED by delayed and insufficient funds, lack of employable labor, restrictions against giving advance notice of fire weather conditions and a fade-out of CCC camps, forest protection agencies throughout the country are making heroic efforts in preparation for any and all forest fire emergencies which may occur this summer to impede the war effort. Prolonged droughts with dry winds and fires set by enemy saboteurs are the two conditions most feared.

Reports received early in May by The American Forestry Association from state, federal and private forest agencies present a national picture of precautionary and organization measures more elaborate than anything heretofore seen in the forest fire history of the United States. These measures range all the way from the drafting of women, high school and college boys and the organization of groups of farm boys for fire prevention service to the coordination of military, industrial and civilian groups into statewide volunteer organizations subject to call if and when forest fires threaten local war industries, resources or movements. In several states governors have issued special proclamations warning against forest fire. In Kentucky the governor's proclamation declares the setting of a forest fire to be an act of sabotage, the punishment of which under the state law may be the death penalty.

In the meantime the East had its first and worst of abnormally bad fires during the month of April. The most serious outbreaks occurred in central Rhode Island and eastern Connecticut and over an extensive area in the southeastern states of Virginia, North Carolina and South Carolina, northern Georgia, and eastern Kentucky, Tennessee and West Virginia where drought conditions, said to be the worst in sixty years, set the stage for several thousand fires which are estimated to have burned over upwards of half a million acres of woodland. Unlike typical ground fires of the South, many of these conflagrations were lifted into the crowns of the trees by high winds with the result

that damage to merchantable timber and young growth was abnormally heavy. Many rural homes and other buildings were destroyed. In Virginia alone, the state forester estimated that between sixty and eighty farm buildings were burned.

Although many of the fires were of incendiary origin, no clear evidence of organized or fifth column sabotage has been uncovered. On this point the report from North Carolina's chief of forest fire control is representative. "Incendiaryism," he states, "particularly during the month of April, has undoubtedly played a somewhat larger part in fire occurrence on our protected areas than is normally the case. For example, incendiaryism for the past few years has averaged about twenty-five or thirty per cent in our list of fire causes. This spring, especially in our mountain regions, it is my opinion that the percentage will be appreciably higher. I wish to emphasize, however, that we have uncovered no evidence as yet to point to any organized sabotage as such. In short our incendiaryism this spring, in my opinion, has been due to the same old local causes."

Nor has any serious disruption of war activities been reported. Great numbers of people old and young, however, were drawn from their daily work in bringing the fires under control. State foresters of the states concerned are high in their praise of the civilian response to the calls for help in extinguishing the fires which with a few exceptions were brought under control during the first week of May.

During the latter part of April Rhode Island suffered the worst outbreak of forest fires in its history. Driven by winds the fires spread so rapidly as to cause local conditions of uncertainty which led the governor of the state to call out the National Guard and to declare martial law in certain hazardous areas. Before the fires were finally brought under control over three thousand people—men and women, civilian and military—were called into action, including units of the American Red Cross, soldiers from Fort Devens in Mas-

LATE FLASHES

FOREST REGIMENTS—As predicted in the March issue of this magazine, forest regiments will soon be a part of the American war picture. Plans for two regiments are now being drawn in the War Department, it has been learned, and early announcement of them is anticipated. While these regiments may be small and for preliminary service in this country, it is understood that more and larger regiments are in prospect for service with the armed forces of the United Nations—wherever they may be needed. Complete story of these new developments on the forest war front will appear in the July number of *AMERICAN FORESTS*. Watch for it.

EMERGENCY FIRE FUNDS—The Senate on May 20 passed the Agricultural Appropriation bill carrying an increase of five and a half million dollars for emergency forest fire control. As this issue goes to press, conferees of the two houses are adjusting differences for final passage. If the House accepts the Senate's increase for forest fire control, the total emergency funds that will be available will amount to \$11,300,000. See story on page 282.

FIRE PREVENTION CAMPAIGN—The greatest fire prevention campaign in the history of the nation is in the offing. On May 18th the advertising industry of the United States, through its wartime Advertising Council, laid before Secretary Wickard of the Department of Agriculture a nationwide publicity campaign designed to make forest fire prevention the patriotic duty of Americans in every walk of life. Representing all arms of the advertising industry and organized to marshal its forces in the successful prosecution of the war, the council's plan would bring into the campaign all media of advertising publicity in the country. Secretary Wickard is considering the offer with the idea of putting it into immediate effect.

sachusetts and sailors from the Quonset Point Naval Air Station.

These fires swept over a wide area estimated at twenty thousand acres in Rhode Island and Connecticut and are reported to have caused damages amounting to \$3,000,000. Included in property burned were three lumber yards where the U. S. Forest Service had in storage a million feet of lumber sawed from logs salvaged from the New England blowdown of 1938. Evidence pointed to many of the fires having been wilfully set with the result that investigations were begun at once. On May 14th, a press report from Hartford, Connecticut, stated that the state police of the two states had announced the arrest of a man whom they said had confessed to starting the forest fires. He was described as a pyromaniac and not an enemy saboteur.

In dealing with forest fires this year, forest agencies are finding themselves confronted with a great variety of difficulties. In virtually every state experienced personnel of regular protective organizations has been depleted by the military draft and by opportunities for other employment at higher wages. The situation common to most regions is well summarized by a forester in the Lake States. "Besides the difficulty of attracting younger men into our organization," he reports, "general employment throughout the states is making inroads in our entire organization because of higher rates of pay and salaries for defense work. This has resulted in starting our forest fire season for the first time that I can remember without at least having our organization ready to go at a moment's notice. In many instances there are fire towers which are not manned and large areas for which we do not have fire wardens either trained or untrained ready to assume their duties."

Shortage of rubber and fire fighting equipment is another factor making protective organizations less mobile and speedily effective. In addition to these difficulties fire hazards have risen in many regions due to more extensive cutting of timber to meet war demands, which has increased inflammable slash in the woods. The government's pressure for extending the crop acreage is also increasing clearings of brush and woodland which means more burning of brush than normally. Another condition heightening the forest fire danger in many regions is the concentration of urban people unfamiliar with forest fire in outlying military areas.

The delay of Congress in making available special forest fire appropriations to meet the unusual emergency has been and still is a serious factor in making it impossible for the protective agencies to complete their protective organizations. Not knowing whether funds will be available or in what amount, it has been impossible to contract emergency employment in advance and thereby to make definite provisions to hold whatever local labor may be available for the fire season.

Congress did not pass the first emergency forest protection appropriation of \$5,812,000 until April 28, and as this is written in mid May an additional appropriation of \$5,500,000 is still hanging fire in Congress. The necessity of increasing wages in order to retain as many regular and experienced fire fighters as possible has naturally hastened the depletion of regular funds. "Because of insufficient funds," reports one state forester in stating the situation generally existing, "we have not been able to employ sufficient temporary forest rangers this spring. Were additional funds provided now I know we would be unable to secure efficient labor in many localities because the best men have already secured work for this spring. Without additional federal funds we just can't place our full plans in operation." This was written the last of April when the fire season had already started in this particular region.

To meet these and other difficulties, protective agencies nevertheless have gone ahead developing and putting into effect as far as possible emergency plans designed to meet local forest fire hazards, particularly in areas considered critical from the standpoint of war operations. In the more important forest regions these plans involve elaborate integration with military and civilian defense agencies. Restrictions on people going into the woods on other than business are planned in respect to certain state and national forests and private forest areas of high vulnerability to fire. For the first time the U. S. Forest Service has opened its ranks to the employment of women in its fire service wherever they may be effectively used and a half dozen or more states, including North Carolina, Virginia, Massachusetts, Rhode Island, New Jersey and Connecticut, are using women as forest fire lookouts. This, however, is not a new departure for Connecticut and Massachusetts, both of which have employed a number of women lookouts for several years.

Offsetting the many handicaps against which pro-



teetive agencies are working is a growing alertness of the American public to forest fires as a menace to our war effort. This alertness is providing the protection forces with a volunteer service that will help make up for the shortage of experienced fire fighters. The difficulty here, however, is to use volunteers to the best advantage and to organize them so that they can render service in preventing fires as well as in extinguishing them after they start.

Protection plans involving both regular and volunteer agencies have been and are being most highly developed in the West Coast states, which constitute the most critical area from the standpoint of war operations. Typical of the region is the organization which has been developed in Oregon where a state forest defense council has correlated state, federal, industrial and civilian activities. Representatives of this council meet twice a month to consider inventories of men and material, plans for their deployment, cooperation with the Army and with agricultural and other interests. Describing the plan further, John Woods, Secretary-Manager of the Oregon Forest Fire Association, reports:

"The first line of defense in non-operative forest areas is the system of rangers, guards, wardens, lookouts and dispatchers, distributed over public and private forest areas. They have at their disposition quick-hitting standby crews of trained fire fighters. With the emergency appropriations, the number of such key men will be considerably increased, as will the number of standby crews. These first line forces are composed of the old reliable, whose numbers have been somewhat decreased by war calls, and something like one thousand college and high school lads of strong physique, who have been given training courses during the spring. This first line force probably will add up to somewhere between 2,500 and 3,000. In the operating areas, the first line is the camp warden and the logging or other forest crew.

"The second man-power group which might be considered as held in support of the first line is the rather large reservoir of 70,000 or more employees in the woods and in country sawmills, and the like. In certain areas, there are also numbers of ranchers and similarly employed men who are on call. The idea is that these logging or milling crews will be

STRIKE DOWN THIS MONSTER!



Reprinted from The American Weekly, May 17, 1942

HOW TO PREVENT FOREST FIRES



MATCHES. Do not ever match or light a fire before you throw it away.

SMOKING. Smoke only while in camp or in a safe place free of all inflammable material.

TOBACCO. Be sure that your ashes and cigarette butts are dead before discarding them.

MARINING CAMP. Before building a fire wear out all inflammable material.

CAMPFIRE. Make a campfire only in a safe place.

BREAKING CAMP. Never break camp until your fire is out — dead out.

Source: Forest Service

HOW TO PUT OUT A CAMPFIRE. Use the rods while making them with water. Turn small sticks and brush back and forth. Wet the ground around the campfire.

BRUSH BURNING. Never have slash or brush in windy weather or while there is a dry spell. Never burn it against trees or logs or tree brush.

EXTINISH. Make sure you are sure.

REPORT. See fire warden, ranger, or to the nearest telephone and ask for the local Forest Ranger or Fire Warden.

Illustration

As a contribution to the 1942 campaign to scotch forest fires and help win the war, The American Weekly has contributed 300,000 copies of this poster, which appeared in its May 17th issue, to the U. S. Forest Service for nation-wide distribution. The poster is fourteen by eighteen inches in size and is printed in four colors. Copies may be obtained by writing the U. S. Forest Service, Washington, D. C.

progressively available, if, as and when needed in their own or nearby localities. If we get into a really bad situation, then all operations may be shut down and the men taken; but the intent is to interfere with woods production as little as possible. It is also understood that if real need arises, troops will be available.

"Through the efforts of the Agricultural Extension Service and the forty odd county agents, assisted by forest fire wardens and rangers, rural protection units are being organized and equipped throughout the farming and ranching regions. It is hoped that these units will deal with their local fire problem so that there will be no calls upon the forest defense forces to go outside their proper territories.

"Another organization, which may have great possibilities for service, is the (*Continuing on page 284*)

BIGHORNS ON THE MARCH

By CLIFFORD SPENCER



The trek of the Bighorns to their bedground in the Tarryall Mountains

IN THE Tarryall Mountains of the Pike National Forest, Colorado, a short distance to the north of Pikes Peak, a band of Rocky Mountain bighorn sheep — one of the most picturesque wild animals ever to range mountain terrain — is staging a comeback that merits national attention. The herd now numbers about 500, and has the distinction of being the one large herd remaining in the country that appears to be "doing well" and increasing in numbers.

For a good many years, preservation of the Rocky Mountain bighorn has been somewhat of a quandary to wildlife conservationists. Not only have their numbers steadily declined but years of protection seem not to have reversed the vanishing trend. Whether this down-hill fight for survival is due to loss of native range, disease, predation by other wild animals or poaching by man has not been clearly established. In any event the preservation of the noble bighorn even under protection and management has not been an assured possibility.

The Tarryall herd, however, is giving a brighter aspect to the picture and is reviving hope that the case of the bighorn may not be as dark as some have believed. The herd is one of the largest remaining. It has been under close observation by forest officers for the past four years. Although the Forest Service

has been making estimates of Rocky Mountain bighorn sheep in Colorado, this is the first herd to show a marked increase in numbers.

In view of its showing, it is interesting first to take a look at its mountain home and then to tell something about the home life of this wary animal which few people ever see in its wild haunts. The Tarryall Mountain range extends for some fifteen miles between the north and south forks of the South Platte River. It is a wild and rugged area of granitic and basaltic origin. Here the bighorns range from the meadows in the Tarryall Valley at 8,600 feet during the winter up through the scattered ponderosa pine and aspen to the summer pastures of alpine meadows above timberline at more than 12,000 feet elevation.

The bighorn sheep frequent the cliffs and bluffs, often where it is impossible to take a horse. To observe them in their home, therefore, involves difficulties and physical hardships, sometimes almost beyond endurance. Fog, rain, hail, snow, terrific winds, periods when temperatures are far below zero, all in rugged terrain at high altitudes are part of the observer's lot. Then, too, sometimes after an exhausting climb, it is disappointing to find that the sheep were on some other part of the mountain or that they



Part of the fine band of Bighorns on their winter range in early December

had detected the observer's presence and moved to some point where they felt more protected and hidden from view.

The real test of endurance comes in the winter time when it is not uncommon for the temperatures to remain below zero even during the day time and when remaining in one position for fairly long periods, as a wildlife observer must, can easily become torture. The privations are, however, far outweighed by the

many never-to-be-forgotten experiences and observations obtained during the conduct of a study.

The bighorn ram loves to fight. This trait, combined with his polygamous habits and the presence of many full-grown males, is responsible for interesting battles during the rutting season. The number of rams engaged in the battles has varied from two to fourteen, and the struggles extend from a few minutes to several hours.



A fine shot of an old ram and four youngsters on their summer range above timberline

The serious battles are confined to the mating season. "Playful bouts" occur at other times, especially spring and summer. The main difference between them and the real battles in the fall seems to be that during the "playful bouts" one ram makes no attempt to take unfair advantage of another. An opponent off balance, or not quite prepared, is given an opportunity to "get set" for a charge. During the real battle nothing is barred.

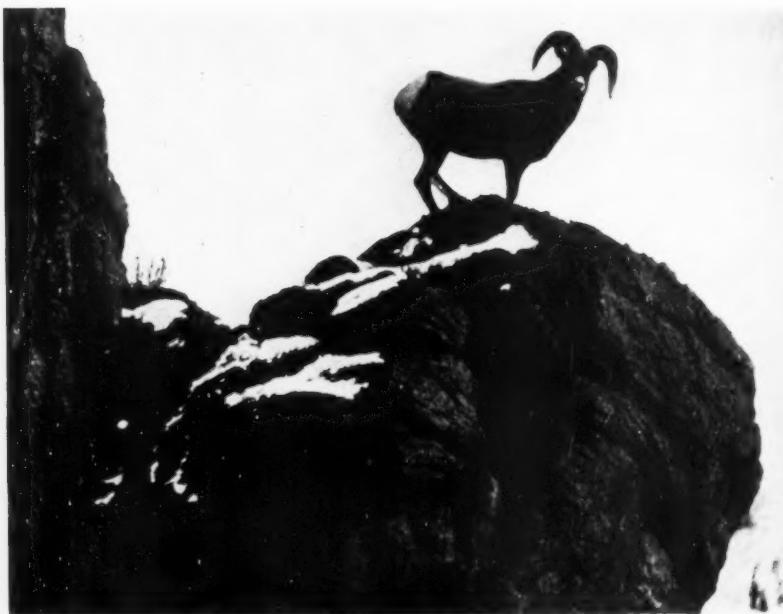
A serious quarrel often begins with two rams standing side by side, facing in opposite directions, sometimes with each ram's head over the other's back. They punish each other by upward blows with the

stiff-legged and watching the opponent to see that no unfair advantage is attempted. After gauging their distance they get set and repeat the performance.

One of the interesting things about the battles is that in most cases it is difficult to determine which ram is the winner. A battle may end as suddenly as it began, and quite often the rams walk away in a very chummy fashion.

Free-for-alls occur and are also serious affairs, sometimes involving as many as fifteen rams. The bouts may last for an entire day and are far more furious and exciting than the individual fights. The ewes responsible for most of these battles attempt to keep out of the way but at times become involved and receive some of the rough treatment intended for the combatants.

I recall vividly the case of four large rams, which were with twelve ewes and lambs, engaging in a free-for-all. When first noticed, the rams were in a "huddle," similar to a football team, with their heads together and noses close to the ground. Suddenly they broke out of this huddle and, for some twenty minutes, were engaged in a genuine melee. The fight was confined to a small area, and while there were no long head-on charges, the pace was terrific and nothing



"Who goes there?"—Bighorn ram on late evening guard duty

forelegs, accompanied by considerable grunting and snorting. This procedure may be followed for a few seconds to twenty minutes. Having developed the proper mood, they walk away from each other — from twenty to sixty feet — whirl like a couple of duelers and charge headlong with great speed, muscles bulging and coordinated so that every ounce of their weight and energy is thrown into the impact. Sometimes, instead of completing the charge on all four feet, the last four or five yards are made on their hind feet with forelegs rigidly extended. A second before the impact the heads are lowered and the combatants meet horn to horn.

These charges result in a sharp almost rifle-like report which may be heard for a mile. After the rebound the two partially dazed rams may stand for perhaps twenty seconds with noses a short distance apart, eyes glassy, and sides heaving. Carefully and slowly they back away for another charge, each ram

was barred. Rams were struck from all sides in a very unorthodox manner. One ram watched for the chance, and finally backing away from the fight as gracefully as was possible under the circumstances, scampered up into the ledges. Shortly after, a second ram made his exit, and the other two battled alone until tired. They laid down, perhaps fifteen feet apart, facing each other. They must have been calling each other names, for suddenly they came to their feet, charged, and were at it harder than ever.

The mating season ends late in December, after which the larger groups of ewes and lambs disband and scatter in smaller groups. The older rams leave the rest of the sheep and seldom join them until the next fall. Factual data do not bear out the "Guardian of the flock" stories and theories as applied to the bighorn ram, since for ten months out of the year he has no interest in the welfare of the ewes and lambs.

The older ewes are the first to leave the winter

range. The migration to higher range starts in April, and by May 15 most of them will be found on or near the areas used as lambing grounds. The rams and the young sheep may not go to the high country until June.

One of the most interesting portions of the bighorn family life has to do with the lambing period. Unlike domestic sheep, the bighorns have a single lamb, —at least I did not see any ewes with twins. When it is time for the stork to arrive, the ewe deserts the other sheep and seeks out some very secluded spot where she will be protected from natural enemies. Sometimes these areas selected for lambing are almost inaccessible to man, being protected by steep and rather smooth rock faces, cliffs, rock slides and jumbles of boulders. For a few days to a week after the lamb is born, the ewe continues to stay in her mountain retreat. As soon as the lamb is strong enough to travel, the mother then rejoins the other sheep and becomes a part of a small band of ewes and lambs.

The lambing season is almost over by June 15, at which time the ewes have again formed larger groups, always staying on or near the roughest rim rocks in the area. The feeding periods are frequent and may last for three minutes when lambs are quite young. After the first week they are seldom permitted to nurse for more than twenty seconds. At first the lambs are able to walk right under the ewes, but when one month old they get down on their knees to nurse. Lambs nibble grass and clover at an early age and by the end of the first month may be seen grazing right along with their mothers.

In some respects, the bighorn sheep lambs are like the domestic lambs in that they like to play and mimic their elders. They exhibit sudden fright, jump sideways and then race one another over the rocky terrain. They are apparently also mischievous children. On some occasions they seem to cry "wolf" and thereby cause their mothers great alarm, as they immediately become alert and look for danger. Ordinarily, though, the ewes are prepared for any surprises, since it is customary in a group of ewes and lambs for one or two of the mothers to stand guard while the others are feeding or resting.

August finds the ewes and lambs at higher elevations, quite often above timberline, where they enjoy the highly palatable sedges, clovers, and other vegetation of which the alpine meadows are composed. At night they seek shelter and protection in the rocks and crags, where heavily used bed grounds may be found.

Twice during the last sixty years the Tarryall herd has been subjected to (Continuing on page 285)

The start of a fight between two rams is not unlike the beginning of a modern prize fight—or maybe it's the other way around. 1—They shake hands. 2—Go to their corners. 3—Come forward and size one another up. 4—Charge, and 5—Engage in furious infighting





Nature's Pocketfull of Pills . . .

KEEP YOU HEALTHY,
WEALTHY, AND WISE

By GRACE V. SHARRITT

NATURE has a pocketfull of health pills done up in the lilting song of the thrush, in the shimmering wings of the butterfly, in the velvety petals of the wildflowers, and many other delectable sunshine capsules.

Pick out the one which most appeals to you. Soon you will have become so absorbed in the kind of pill you're taking that you will have forgotten why you started dosing yourself. For the one remedy which is a sure winner in capturing the magic three-word formula, "healthy, wealthy and wise", is a vital interest in the out-of-doors.

"Go fishing," a doctor ordered a young mother, after a serious illness. "But I can't fish," she exclaimed. "Go anyway," he advised. "And come back to me in six weeks." She returned to his office as directed, completely changed. A fairy tale? No, but it's a fish tale worth following. Fishing is not strenuous exercise, unless you hook a big one. Yet it gives you the tonic of sunshine, of

sweet, clean air, of restful relaxation, plus a reason for getting out-of-doors. Fishing is one of Nature's most palatable pills. Or, perhaps the outdoor medicine of "birding" would be more to your liking. To "bird" is to be able to extract joy from recognizing the bits of feathered life in backyards and country lanes, along vacant lots of city streets and shores of lakes. It is the sort of pastime that John James Audubon made famous. And what's more, birding can become a profitable pastime.

I know a man who is earning his part-time bread-and-butter from a hobby he fostered in a wheelchair while recovering from a foot amputation. In the beginning of his nature-pill prescription he was despondent and refused to be cheered as he sat in the sun in his garden. He turned away friends, fearing their pity, despising their sympathy, and was in a fair way of becoming a Scrooge.

But it wasn't a ghost that brought returned confidence to him. It was a wren. Just a tiny brown bird with a saucy song and a curious manner. This wheelchair observer, in spite of his determination not to be aroused from his lethargy, followed that wren's career, from courtship in May to two successive batches of baby wrens during the summer

and the family's farewell leave of the garden in early autumn.

From wrens, his interest spread to other song birds. He discovered hitherto unknown resources within himself, a circle of feathered friends and a keen desire to delve into their lives and habits. In the meantime, Old Sol in the sky sent down healthful violet rays and breezes from the south wafted health, wealth and wisdom to the man reading books on ornithology in a city backyard, making notes on the larvae eaten by different bird species, and reporting his findings to scientists.

It isn't necessary, of course, to suffer a physical handicap in order to share in the health and beauty profits of outdoor therapy. Mix housework and outdoor adventure and you have a formula for health and happiness which is not found in drugstore pill-boxes.

The rich earth, stocked with precious minerals and stones, may be the lift you need for a jaded mind or sick heart. A young man once cured himself of a deep-seated inferiority complex by picking up stones. He now has a valuable collection and is an authority on meteors. Mineralogists from all over the country stop at his door. He forgot his diffidence with people in a common interest of the outdoors.

We've heard of "sermons in stones," and there are lessons to be found in rocks and rills. For rills



are a grand pick-up when you are tired of it all. There's an unbeatable cure for maladjustments in the clear, swift waters of a brook, or the gently rippling waves of a lake. "What on earth are you doing?" I asked, one summer day, of the slim, blue-eyed girl who peered from her boat into the shallow water along a lake shore.

"Hunting turtles," she replied blithely. As though hunting turtles was an everyday pastime for a delicately fashioned young woman!

"What do you want of turtles?" I asked.

"Dad and I trap them," she answered. "Some we sell, others we give to universities. But my real reason for helping dad is that, after a winter of teaching underprivileged children, I need Nature's pick-up to give me fresh courage to return where poverty alone is known."

And health and courage she will have gained after a period of Nature's medicine of boating and wading in sun-warmed waters looking for turtles.

Whether it's stones, birds, turtles, wildflowers, or stars, choose your own pill from Nature's pocket and try a six weeks' experiment. I wager a butterfly to a rainbow you'll have roses in your cheeks, a keener appreciation of living, and the kind of sparkling humor which comes only from a renewed interest in the out-of-doors.



CANADA'S PULPWOOD BACKS THE ALLIES

By HORACE DONALD CRAWFORD



Royal Canadian Air Force Photo, courtesy Dominion Forest Service

Huge booms of logs are floated down the rivers to the mills—ready for use. This minimizes transportation costs

PRIME Minister Winston Churchill said at a press conference I attended in the Canadian capital that Germany no longer makes peace bids to Britain because they don't want to waste the ink and paper.

Wars are not fought entirely with bombers, tanks, ships, shells and bullets; they are also fought with paper. Canadian newsprint goes into about seven of every ten newspapers in the Western Hemisphere.

Elaborate government agencies are necessary to administer a war, and these require vast amounts of paper. This is true in Canada and Britain as in the United States.

Even before the United States entered the war, government agencies at Washington were using more than 800,000 pounds of mimeograph paper each month, while the Army and Navy in the field were

using another 800,000 pounds. Reports, orders, speeches, press releases — all required vast amounts of paper. This was mimeograph paper alone. Now that the United States is in the war, its need for wood pulp and paper has greatly increased.

Since Nazi invasions cut off pulp and paper supplies from Norway, Sweden, Finland and other European sources, Canada has provided much of the newsprint for Britain's presses, much of the paperboard for shelters and army camps, and other papers needed by Britain. Thousands of Canadian lumberjacks have crossed the Atlantic to cut forest products in Britain.

Canada is the largest newsprint producer in the world. Newsprint manufactured on the North American continent in 1941 totaled 4,785,577 tons, with Canada supplying seventy-one per cent, or 3,425,865 tons. The United States provided twenty-one per cent, or 1,014,912 tons, and Newfoundland produced eight per cent, or 344,800 tons. Canada's newsprint production was 7,000 tons more than her 1940 output of 3,418,803 tons.

Wood, wood products and paper lead all other groups of Canadian produce in export values. These products bring a larger favorable trade balance than gold, agricultural and vegetable products or the tourist business. This remains true even with total exports greatly expanded by the war.

You can realize what forest products mean to Canada by considering 1941 when exports of wood, wood products and paper totaled \$387,113,232. Since Canada imported only \$36,739,071 in forest products, the favorable trade balance was \$350,374,161. The United States received \$285,996,876 worth of Canadian forest products in 1941, while exports valued at \$57,493,633 went to Britain, leaving \$43,622,723 for other countries.

War has brought strange trends in trade, and these have an important bearing on Canada's pulp and paper industry. Censorship rightly forbids detailed information regarding international trade, but it is no secret that Canadian imports from the United States have more than doubled since 1939, as have Canadian exports to Britain. Canada imported commodities in 1941 from the United States valued at \$1,004,391,619, compared to \$744,231,156 in 1940 and \$496,898,466 in 1939. Canadian exports to the United States in 1941 totaled \$599,713,463, compared to \$442,984,157 in 1940 and \$380,392,047 in 1939. Gold is excluded from these figures.

I mention these figures to show that in 1941 the United States had a favorable trade balance of \$404,678,156 with Canada. Since Canada has not been sharing in lease-lend aid to Britain, but has paid United States dollars for war purchases, you can understand why Canadians have used drastic means to

Courtesy, E. B. Eddy Co., Ltd.

Visitors to Canada's capital may look across the broad Ottawa River and see huge stacks of the patriotic pulpwood which is backing the Allies



conserve United States dollars when one year's trade leaves the Dominion a trade deficit exceeding \$400,000,000.

Despite Canada's vast production of pulpwood and paper, there is already talk of a possible paper shortage. Dominion exporters must now have licenses. Prices are regulated. Citizens are urged to save paper. Pulp and paper machines are not only producing newsprint and other printing papers, but also special papers for vital war needs. Their machine shops and skilled workers, in addition to servicing

the industry have assumed responsible administrative positions with the government. Numerous other workers have gone into direct war industries where wage scales are higher. Thousands of Japanese workers removed from British Columbia protected areas are being established in other Provinces and it is expected that many will cut logs for pulpwood.

Pulpwood and paper manufacturing costs have risen and efforts are being made to enable the industry to continue without economic disruption. Government restrictions, however, have increased. Taxes have risen.

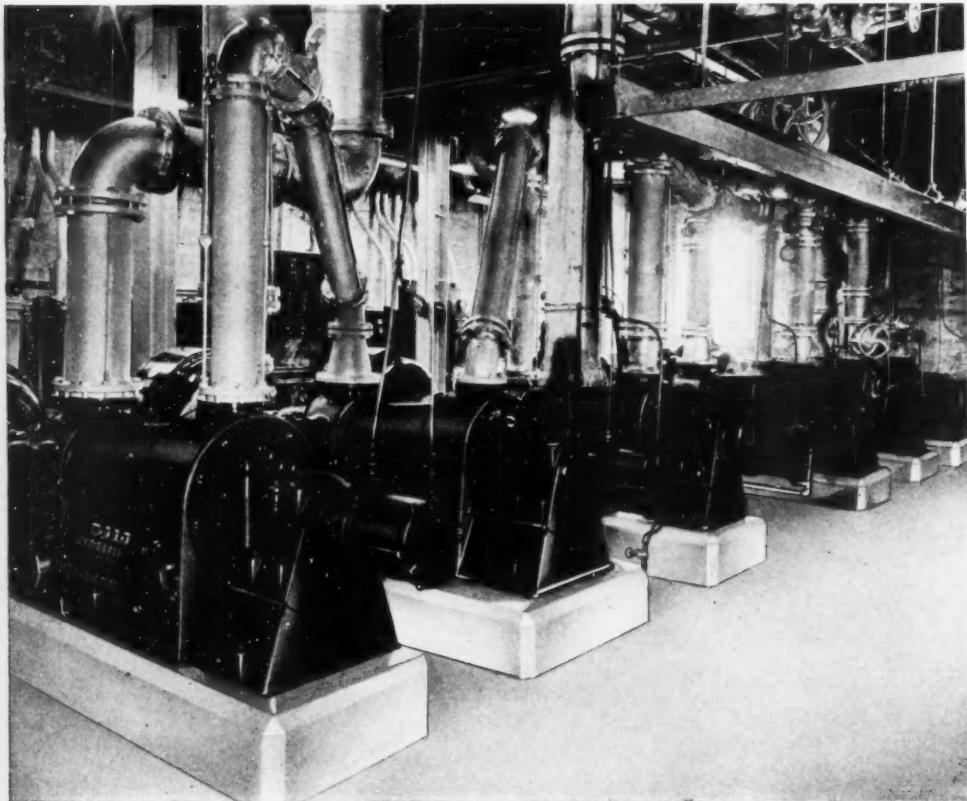
Prices are now fixed on pulpwood for domestic consumption at the highest prices between July 1 and December 1, 1941.

Export prices are not subject to Canadian ceilings. Canadian newsprint in 1941 formed eighty-one per cent of paper tonnage manufactured in the Dominion. Canada's newsprint has sold in the United States since 1938 at \$50 a ton. Because of increased manufacturing costs, Canadian firms had hoped to increase this price on April 1, 1942, to \$53 a ton. On March 26, the United States Office of Price Administration established a temporary price ceiling of \$50 a ton on newsprint. This sixty-day ceiling, which became effective April 1, automatically postponed any change in the price of Canadian newsprint in the United States.

Canadians explain that newsprint is the only commodity in international trade that

has not increased in price since the outbreak of war. In 1938 the Canadian price on the New York market jumped from \$42.50 to \$50 a ton after a United States firm raised its newsprint price to \$48 a ton. In 1937 the price had increased for Canadian newsprint from \$41 a ton. In 1934 and 1935 it was at an all-time low of \$40 a ton on United States markets. One Canadian official told me that in those depression years "the industry was going to hell on skids."

Canada and the United States are both trying to



Courtesy, J. R. Booth, Ltd.

The most modern equipment for the manufacture of paper in Canada is installed in these mills. The machinery is operated from a control panel on an upper floor

plant machines, are producing "bits and pieces" for guns and other war machines. Machine shops of the industry began this program in 1941 and turned out vital pieces valued at more than \$4,000,000. This program is constantly increasing and its real value in war service cannot be designated in dollars.

Canada's pulp and paper industry hopes to maintain its production, despite problems created by a war, including labor shortage. In 1940 the industry employed 34,719 persons. More than 2,000 employees have entered the armed forces. Many executives of

control prices and avoid repetition of the skyrocketing inflation that sent the price of Canadian newsprint to \$112.60 a ton after the World War. Canada's Wartime Prices and Trade Board and the United States Office of Price Administration are attempting to arrive at uniform prices for newsprint and related products. This is one important phase of a much broader joint Canadian-United States effort to prevent inflation pitfalls of the last war, and its disastrous aftermath. Canada underwent the painful transition from peacetime to wartime economy earlier than the United States,

having been at war for twenty-seven months before Pearl Harbor.

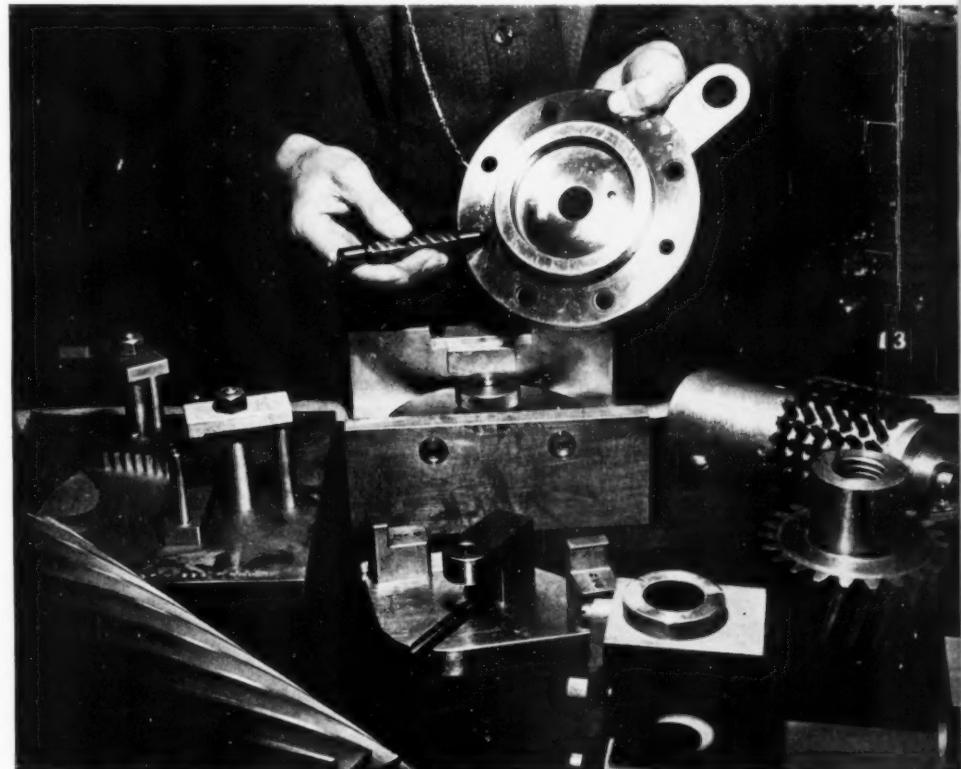
Pulp and paper mills helped this transition. They have made sacrifices. Materials formerly used for improving paper are now serving the Dominion's war effort. Machines are operating at nearly top capacity to produce special war papers as well as newsprint and other papers. Operators spent about \$4,000,000 in 1941 to improve their equipment. Mills are endeavoring to reduce waste and increase efficiency. Various mills have increased their sulphite capacities. Coal-burning boilers for process steam have been placed as economy measures in areas where hydro-electric power is needed for vital war industries.

Newsprint production policies have also changed to reduce costs. Colored papers are discouraged. Fewer varieties in sizes, colors and weights are produced. Standards of book and fine writing papers have been lowered because chemicals needed to attain highest qualities in textures and shades are now required in war industries. More and more machines are turning to the production of special papers. Munitions factories, for instance, require vast quantities of various wrapping papers. Some of them may be made on newsprint machines.

Canada's importance in producing pulpwood and paper is increased by the war production strategy of the United Nations providing that each nation shall

produce supplies it is equipped to turn out most efficiently. The Canadians are endeavoring to meet this challenge. They have met their production demands of the war in a magnificent manner. Pulp and paper men have been no exception, and there is no reason to believe they will fail to supply the United Nations with pulpwood and paper to the limit of their powers.

Manpower in Canada, however, is limited. Pulpwood and paper orders pour into Canadian mills in increased volume. With manpower already below normal and machines busy with war requirements,



Canadian Public Information Photo

In addition to paper, many of the 1,387 "bits and pieces" that go into a field gun are now produced in the machine shops of Canada's pulp and paper mills—a contribution to war production which started in 1941

some of these orders are filled with difficulty. Some pulp officials have suggested that the labor situation may cause certain mills to close down. In one lumbering district in Ontario, some 4,000 men were working in the bush during early months of 1942. Orders were said to be sufficient to merit the hiring of 2,000 or 3,000 more men. These men, however, were not available.

Pulp and paper officials in some districts are planning to change from seasonal to full-time cutting in the bush. I was told that if there is any shortage in pulpwood or newsprint (*Continuing on page 287*)

"GOSH! IT'S WONDERFUL!"

Exclaim awe-stricken thousands on first viewing Nature's masterpiece of grandeur, the Grand Canyon of the Colorado

By MARK HANNA

FOUR hundred and two years ago a dark-visaged, gold-fevered Spaniard named Don Lopez de Cardenas stood somewhere on the south rim of the Grand Canyon. He was one of Francisco de Coronado's captains sent to spy out the high tableland of the Hopis and the flaming abyss of the great river, now called the Colorado. Like his superior, Don Lopez had dreams. In this legend-land to the north where the campfire logs of burning juniper made incense smoke for the Indian rainchant, Don Lopez hoped to find gold.

He stood with his men and looked down at the river. He saw it swirl and foam, heard it roar on the rocks of the mile-deep gorge. He saw the distant crags and the temple buttes, saw them flare blood-red in the slanting rays of the setting sun. He saw the

long shadows gather and the blue haze hang like phantom mist in the inner gorge. He saw the eagle soar, felt the solemn stillness of that lonely place. But he found no gold. Don Lopez was unimpressed.

Three centuries passed. Another white man stood high on the rim of the mighty canyon. He was James Ohio Pattie, beaver trapper and frontiersman, and the first American to see the Grand Canyon of the Colorado. He too was unimpressed. He wanted furs. The beaver dams in the granite gorge were too remote, too inaccessible. He thought the temple buttes and the flaming rocks mere "horrid mountains." He was glad to leave.

Of similar opinion was Lieutenant Ives. A surveyor and explorer for the United States Government, Ives' iron steamboat, the *Explorer*, was wrecked on the rocks at the mouth of Black Canyon not far from the point where Boulder Dam is now located. Ives then left his boat and traveled overland. He came to the fabulous terraces of the Grand Canyon. Like the others, the Lieutenant had a feeling almost of revulsion. He mistakenly thought his party to be the first of the white men to see the Canyon and he wrote with emphasis that they undoubtedly would be the last. With no attempt at humor, Ives said of the whole majestic area: "After entering it, there is nothing to do but leave." That was in 1858.

It would be interesting to see the expression on the faces of these three men, the Spanish conquistador, the American beaver-trapper, and the soldier-explorer, if they could stand today before the Administration Building in the Grand Canyon National Park. They would see throngs of people coming literally from all over the world at considerable effort and expense to visit this northern Arizona wonderland. On the Flagstaff-Cameron and Williams highways which converge in front of the Administration Building, these gentlemen would see a running stream of automobiles with as great an assortment of license plates as could be found anywhere. Even distant Maine and Vermont might be represented. In the last tourist year, better than 370,000 people came by train and by car to visit and glory in this "profitless" and "valueless" region of the "horrid mountains."

Many of the travelers who visited the Grand Canyon National Park in 1941 have had as romantic and



Hopi Indian children of the Canyon country at play



The first white men to see the Grand Canyon of the Colorado were a Spaniard and two Americans. First was Don Lopez de Cardenas, one of Coronado's men seeking gold; then came James Ohio Pattie, trapper, seeking furs; and a half century later Lieutenant Ives, surveyor and explorer. They all passed it by as a repelling sight, barren of riches

as colorful a background as did Don Lopez de Cardenas or any of the early adventurers. Five years ago in Catalonia, one of Don Lopez's own countrymen calmly told his horrified parents, "I choose the Loyalist side in this war." He was a young Spaniard of an old and established family. He had been reared in the jealous and conservative traditions of the upper classes and the Church. His parents and friends were ardent Franco supporters. Yet in the mind of this young Catalonian, too many things were wrong with the old regime. He left his home.

This young man stood on the parapet of the Yavapai Observation Station at the Grand Canyon in mid-July and talked with the ranger-naturalist there of Spain and Ernest Hemingway and *For Whom the Bell Tolls*. He had been a member of a ship's crew, had seen the Taj Mahal, the temples of Luxor and Karnak, the harbor lights of Rio, but he had wanted to see the Grand Canyon. This, he thought, was the greatest sight of all. The ranger-naturalist mentioned his predecessor, Don Lopez. The young Spaniard laughed. "Don Lopez," he said, "was like all men whose minds see nothing but gold. To them all the sublimity of the universe goes unnoticed." Pointing down to the canyon he said, "It is worth while to have lived . . . just to see this."

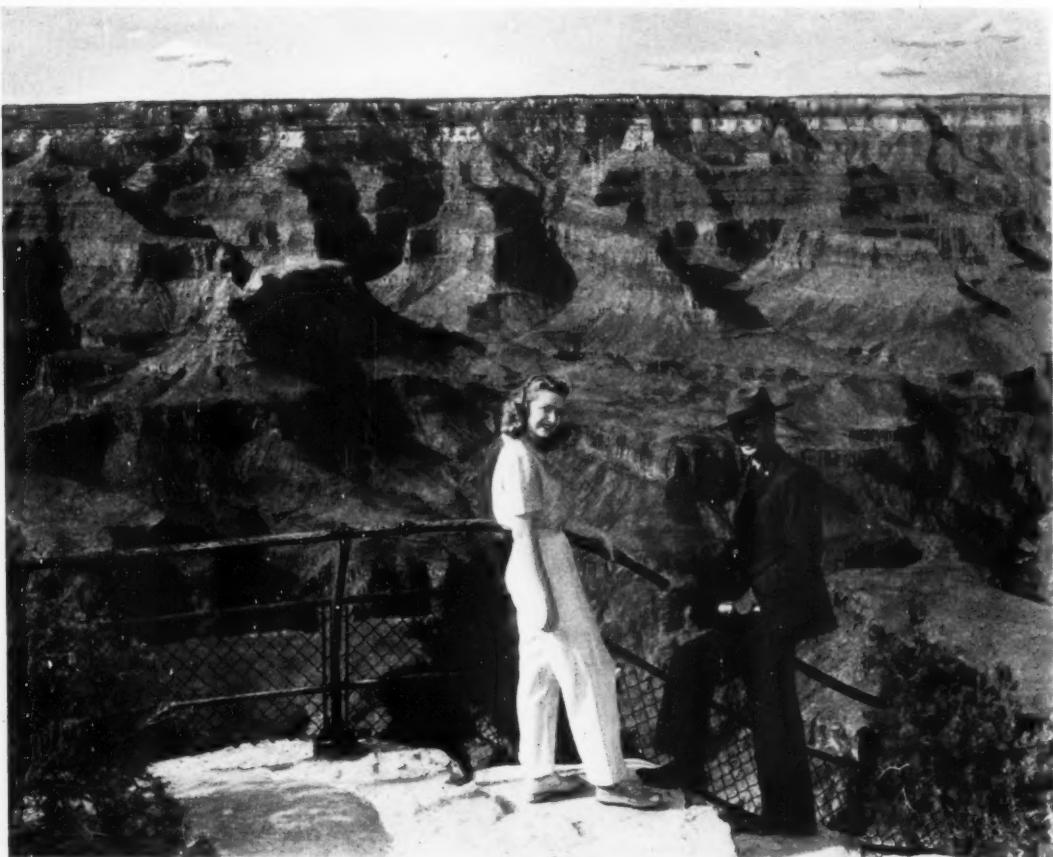
On one of the conducted caravan tours put on by the National Park Service each day at the Grand Canyon was a tall, shy, red-faced man in clerical black. He did not say much at first. However, people became pretty friendly on the Caravans. Later, as he and the ranger-naturalist were walking through the pinon pines and junipers near the Wayside Museum of Archaeology, he said with a rich Irish accent: "I am a Roman Catholic clergyman. Some months ago I was on the English steamship *Britannia*. We were sailing south along the coast of Africa when another ship appeared. It was a German surface raider. Our captain didn't want to give in, so we put up a bit of fight. She was too strong for us, however, and blew us to pieces. Several of the men and I got off on a raft. We drifted for several days and then another English ship rescued us, took us to Montevideo. I'm going back to India just as soon as I can get a ship from San Francisco, but I wanted to see the Grand Canyon."

An Englishwoman, the wife of a high-ranking diplomat at one of the central European capitals, came into the park. She was a flower enthusiast and, happily, at the time of her visit the pine woods of the south rim were bright with blue lupin and larkspur and the red bells of the scarlet bugler were about to

open. "This is all so glorious!" she exclaimed as she wandered into the Yavapai Observation Station after a long walk through the pines. Her hat was askew and her face red from exertion, but she laughed. The ranger-naturalist stationed there did his best to answer her eager questions about Grand Canyon flowers. Then she talked some about herself. People do at the Grand Canyon. The immensity of the scene and the countless eons of time involved make artificial social restraints seem silly and superficial.

intended to go home through Siberia and Russia. Now Russia was at war. They were worried about their children back in Sweden, but they must see the Grand Canyon. So they came. After them were two young boys from London. They knew all about the siren's wail and the dismal thud and crash of bombs. They were not more than ten, but were already veterans of the blitzkrieg. They came with friends to see the Grand Canyon.

Obviously, most of the visitors to Grand Canyon



To the Canyon today—in normal years—come hundreds of thousands of people from all parts of the world to stand on the parapet lookout and there to share the riches of the Creator's handiwork of inspiring glory. A parapet, overlooking the canyon, is shown in this picture of the author and his wife

Quite naturally her talk turned to war. This Englishwoman had fled from her flowers and her pleasant continental garden to escape the ominous snarl of the panzers as they spread east and south through central Europe. She had been half-way around the world and hoped to return to England. "Of course, we'll win this war," she said. "We have no doubt about it."

Then there was the Swedish professor and his wife. They had studied for a year in New York and had

National Park come from continental United States, and the great majority are "just folks." They drive in from Beaver Dam or Joplin or Macon or Snoqualmie Falls. They've heard about the Grand Canyon and want to see it.

Being 1941, before tire rationing and gasoline restrictions, they roll into the park in Pontiacs and Chevrolets and Oldsmobiles and Fords. Some come in Packards and Cadillacs. A few come in delivery trucks. They ask about (*Continuing on page 286*)

Colorado...

FLORAL MELTING-POT OF AMERICA

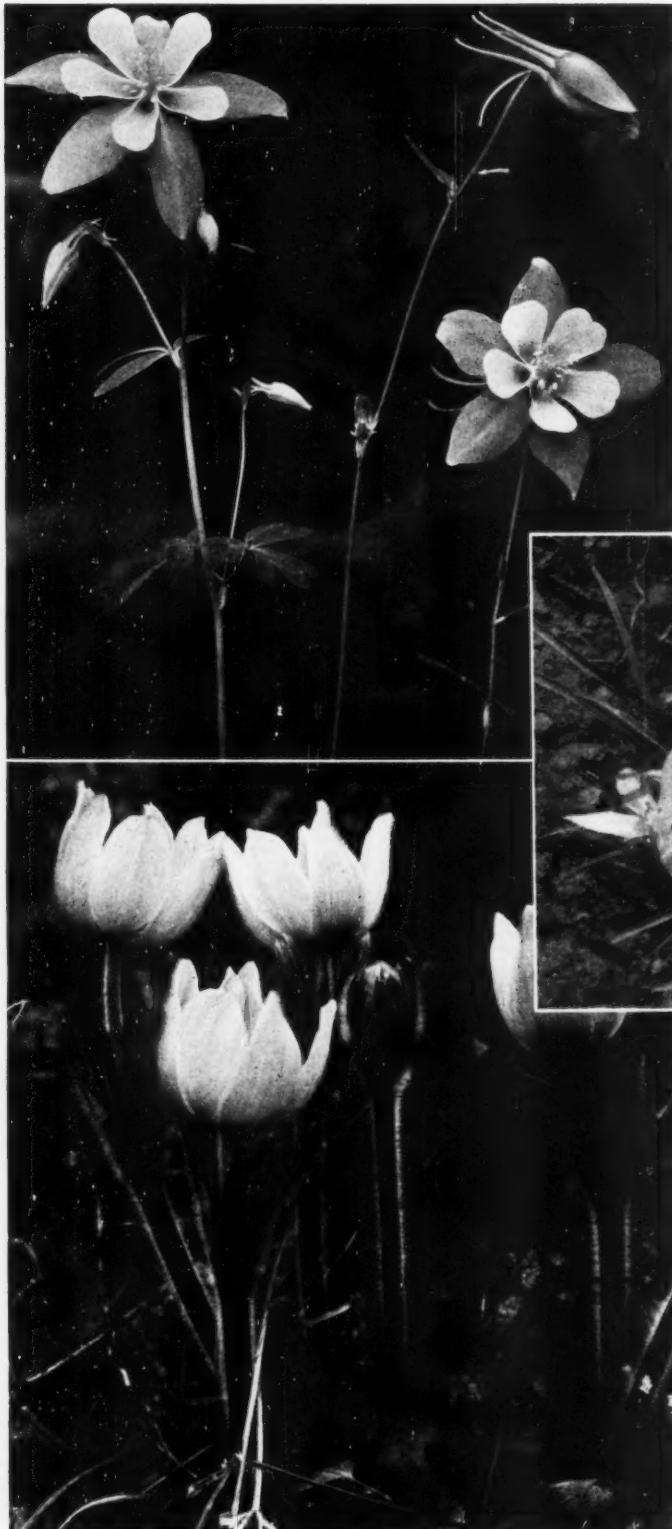
By BERTHA O. KLUG
Photographs by H. L. Standley



Marsh Marigolds below glacier-clad Golden Horn Peak — eleven thousand feet high. Cool rivulets from Colorado's mountain heights water the nearly three thousand wildflowers found in America's "melting-pot"

DO YOU SEE the white-capped, rugged peak, sending down its rivulets of melting snows upon the marsh marigolds below? Such is spring in Colorado at 11,500 feet altitude. Scenes like this are repeated all spring and summer below the many peaks for

which this state is so famous. Three hundred of these rugged giants are above 13,000 feet high, and from forty-nine to fifty-nine peaks exceed 14,000 feet. Is it any wonder that we have a family of nearly three thousand wild flowers?



The lovely Pasque Flower—state flower of South Dakota—before the flower heads drop off to reveal the unique fruit, or "Lion's Head"

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The Sand Lily—"Coquette of the plains and hillsides"

had voted to convene in Colorado to create this most democratic garden, and conserve here for us the plants we love. Well, they made a wise choice, as there is everything to suit their most peculiar taste and habitat. Growth zones, from the plains, at 3,800 feet through the alpine zone, from 11,500 feet to the summit of Pikes Peak at 14,109 feet are offered them. These differing altitudes account for the strange landscape of exquisite alpine settings, crystal clear streams, deep canyons, high mesas, wind-swept plains and treacherous arroyas and desert. Is it any wonder flowers bloom year after year with such amazing tenacity? Hail, burning sun, drought, winds,

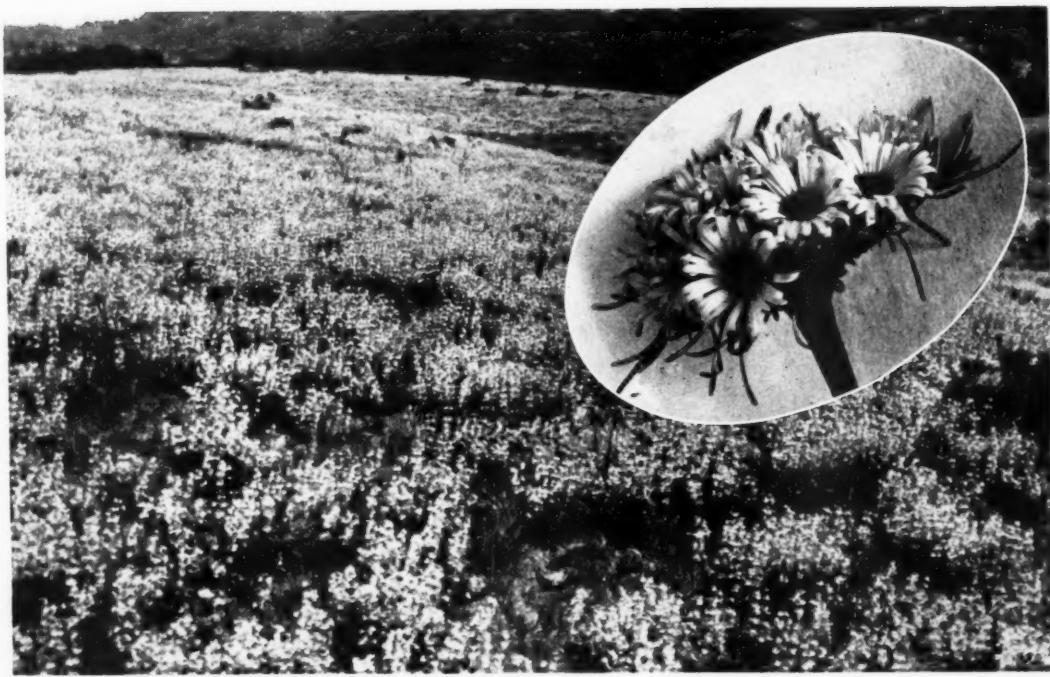
AMERICAN FORESTS

The water supply is assured by snow-covered peaks and sunshine is plentiful and the forests are open and accessible. Most of the shrubs and plants familiar to all of us grow here in this friendly natural garden, and that is why I call Colorado "the melting-pot" of our American flora.

Our song, "America, the Beautiful," was inspired from atop Pikes Peak, the old sentinel that watches along the Rampart Range where plains and mountains meet.

It certainly seems as if flower delegates from north, south, east and west

Blue Columbine—exquisite of form, and state flower of Colorado

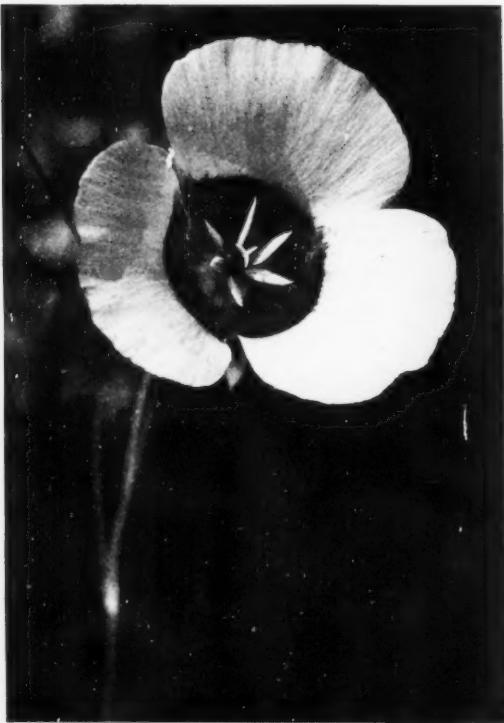


Oval, by Emma Haskell

A wave of the richest blue is a field of Pentstemons. In the oval above, is the dainty Easter Daisy, also called Sand Daisy



Indian Paint Brush — blooming riotously as high as timberline in many colors, is also called "Prairie Fire" because the reds predominate. It is the state flower of Wyoming



Upper—The delicate Mariposa Lily, poised butterfly-like on its slender stem.
Lower—Calypsos—those rollicking pink babies found in moist, shady nooks

storms, washouts, nothing daunts them, not even our strange soil which may be as gravelly as the bottom of a fish bowl, or as shifty as clay, adobe and sand can be. Deep rooted and provided by nature with every possible resource for protection and propagation, one may truly say of these wild plants, "they are prepared." They should be protected from careless over-picking or uprooting.

It's hard to resist picking the little Pasque flowers,



Shooting Star—also known as Indian Chief, starts its profuse blooming in May—purplish pink flowers, shading to a glowing yellow

for instance. Beautiful in water, they last for days and are so charming with their furry blue-lavender buds, like hands clasped in prayer. One cannot blame people for wanting them in their homes. They seem a sturdy lot, and offer sweet solace after the long winter. The flowers bloom for almost a month, then develop a silky green or wine colored plume-like fruit which is called the "Lion's Head." These last a long time until (*Continuing on page 285*)



White and lavender, Alpine Phlox blooms in beauty in
Nature's own rock garden, twelve thousand feet high



Prickly Pear—well named—is every-
where, with its soft yellow flowers
and spiny guards protecting them



Yucca—Spanish Bayonet—Candles of
the Lord—choose any one of its names, it
is still the state flower of New Mexico

YOUTH, TREES AND GAME

Some Conservation Activities of 4-H Club Boys and Girls

By ROSS L. HOLMAN

GO INTO Michigan during the month of April and the chances are you will quickly come across an eroded field in which teen-age boys and girls are setting out young trees. Keep going and you will find other worn-out fields getting the same treatment. All over the state blighted areas are being planted to jack pine, spruce, walnut, oak, ash, and other valuable trees native to the region.

The boys and girls doing this job are Michigan's 4-H Club Forest Rangers. As part of a program developed by the extension service of the Michigan Agricultural College, they have undertaken as a major project the planting of dilapidated lands to valuable forest trees. It is a conservation program of the first order—children and forests growing up together.

Any boy or girl between the ages of twelve and twenty may become a 4-H Forest Ranger in Michigan. As such, he or she must plant from 500 to 1,000 trees under directions furnished by the state extension forester; must make a map of the area planted, and must prepare a written report on the complete operation.

Before planting, the youngster selects some of the most worthless land on his parent's or neighbor's farm. He is told that in forty years each acre planted should produce 20,000 board feet of lumber, or enough to build a barn. The soil is then examined to determine the kind of trees most suitable to plant. This may involve one species, or several.

The trees are shipped to 4-H ranger stations, usually in April, and distributed to members. A thou-



A happy Georgia boy is this planter of a thousand slash pines on his acre project

sand seedlings for each acre is the general rule. Ordinarily, 4-H rangers can set out this number in a day.

After the trees are planted the youthful ranger watches their growth with pride and enthusiasm. He provides the necessary cultivation, guards against fire, keeps progress records, and makes full reports on his operations at monthly ranger meetings. His forest project becomes his pet craze. As the years go by his trees and forest conservation are embedded in his soul.

What Michigan 4-H Clubs are accomplishing is typical of what is being done all over the country. Needless to say, it is one of the most promising developments in human as well as resource conservation.

In Wisconsin, for example, it is not considered good conservation to grow new forests without preparing a generation to care for them. If present boys and girls grow up without appreciation and knowledge of tree values, the same thing can happen to forest areas that occurred under unthinking generations of the past. One of the state slogans is "Let's have boys and trees grow up together."

Under the extension service of the State Agricultural College, a Wisconsin boy may participate in a four-year program of forestry in which he learns by doing. Each year demands more ad-



A baby beaver gets his breakfast



The forester leads the boys and girls into the dense woodland for tree identification and instruction in lumber values and forest management

vanced work on the part of the boy than the preceding year, and he bears an appropriate title to identify his standing. The first year he is a Forest Crafter; the second, a Planter; the third, a Woodsman; and the fourth, a Cruiser. He must meet definite requirements in each grade before passing on to the next. There are records to be maintained; he must be able to identify local trees by bark or foliage; tests and quizzes

are used to stimulate interest in learning. He must plant a certain number of forest seedlings each year; and he must be able to properly manage old woodlots to encourage maximum growth.

Boys are encouraged to develop money-making sidelines such as collecting and selling tree seeds, operating tree nurseries, preparing wreaths for the Christmas market, collecting balsam needles for pillows, and making and selling birdhouses.

These 4-H forestry activities in the various states are by no means all work and no play. Recreation is mingled with sweat and elbow grease. Periodic forest meetings and games are a part of the program. The writer attended a 4-H Club forest and wildlife conservation encampment in Tennessee where each boy present was a champion conservation worker in his county. The four-day trip, with expenses paid, to the encampment was his award of excellence.

The Federal Cartridge Company cooperated with the State Extension Service in financing the cost of the encampment. All each boy paid was a dollar registration fee. A typical day of the encampment began with a 6:30 breakfast; then until 8:30 such games as horseshoe pitching, throwing darts, and ping-pong. After this the sixty boys split into two groups. One gathered in the auditorium under the direction of state game technicians to review pictures of forests and wildlife. They were shown slides of eroded, gullied lands and what is being done to restore them to productivity. Other pictures explained the value of game cover.

The second group of boys were led into the dense woodland by Extension Forester G. B. Shivery. They identified certain trees, discussed the lumber value of each, and learned the rudiments of good forest management.

The auditorium and forest groups would then switch classes. After this came swimming and more games. In the evening were conservation motion pictures with informal and friendly discussions. It is important to emphasize that these 4-H delegates were the chosen best conservationists in their respective communities and all the knowledge gained during their four-day conference would be put to practical application when they returned to these communities.

What these 4-H Club boys are accomplishing in forestry is equalled in the field of wildlife conservation, particularly in the restocking of game birds and animals. Minnesota, under the guidance of T. A. Erickson, former state 4-H Club leader, was one of the first states to adopt wildlife conservation as a club project. In 1934 Mr. Erickson worked out a plan on the basis of county contests, the winners to be chosen on their actual accomplishments and a narrative report on their contribution to the conservation

of wildlife. The first year, seventy-five counties chose winners who were given a five-day camping trip. Soon thereafter about 28,000 4-H boys were taking up conservation work.

Following Minnesota, other states turned to wildlife projects as a part of 4-H programs. Now boys are raising quail, pheasants, and other upland game birds for restocking in their own back yards. In Tennessee, quail production has become a major 4-H project, just as poultry, dairying, or sheep raising.

To encourage this work the state conservation department furnishes quail chicks to any boy or girl who provides necessary facilities for rearing them. The day-old quail are furnished free, together with the necessary mash-es that have been mixed according to approved formula. In one Tennessee county — Washington — 7,000 acres have been assigned as game lands and are protected against hunting. The 4-H quail are released on these acres.

Game projects of 4-H Clubs in this county also include the planting of game cover along fence rows

It was a tense moment for these 4-H boys when they released a young deer shipped them for their project to increase wild life in Wisconsin woods

and corners, in gullies, and on uncultivated lands. Many boys diligently follow winter feeding practices to save birds and animals from starvation. They have also been shown how to use flushing bars on teams mowing hay in order to discover nesting birds before the mowing blade strikes them down.

In every state where 4-H projects are being developed, emphasis is placed on the control of predatory animals and birds. These include the common house cat, gophers, and certain species of owls and hawks. Youngsters are taught clearly to distinguish between the hawks that destroy game birds and poultry and those that attack predatory fowls, animals and reptiles.

This work is being emphasized in 4-H game projects in South Dakota. (*Continuing on page 285*)

EDITORIAL

KEEPING THE RECORD STRAIGHT

A MEANING that does not exist is being read into the recent action of the Directors of The American Forestry Association, calling upon conservation groups "to dedicate their undivided efforts to the doing of those things that are clearly of first importance" in helping to win the war. The Directors mentioned specifically as of first importance in the forest field: (1) the protection of forest and related resources and of war industries against forest fires; (2) maintenance of continuous production of wood and other forest products essential to the prosecution of the war, and (3) the speeding up of forest products research to provide improved war equipment, overcome shortages in other materials and promote conservation of our forest resources. To assure undivided and maximum efforts in doing these and other first things as exigencies of the war may dictate, the Directors urged that highly controversial issues in the forest field, such as federal regulation of privately owned timberlands, be set aside temporarily without prejudice as to their merit or desirability when normal economic conditions are restored.

It is this last point apparently that is confusing the minds of some foresters. Letters have been received from several interpreting the plea of the Directors for a moratorium on the regulation controversy as a reversal of long standing Association principles and as sanctioning under the guise of winning the war the letting down of bars to forest destruction. Nothing could be further from the truth. The action in no way changes the purposes and principles for which the Association has always stood. Nor does it alter present Association policy. What it does is to give recognition by the Directors to the fact that the nation and its people are face to face with a war for survival and that to achieve victory many peacetime activities have to be set aside temporarily. In short, the Directors put in specific form what President Roosevelt has asked all groups and citizens to do — put first things first.

As regards public regulation, the Directors regarded settlement of this long standing proposal one of many questions that can and should be temporarily set aside in the interest of united efforts in accomplishing things of more direct and immediate moment in the prosecution of the war. Public regulation has been the subject of controversy for more than thirty years. The question is still in a controversial state and in recent years has engendered increasing bitterness and division of effort. To continue the controversy at this time, the Directors believe, will merely widen a breach that should be closed and divert efforts that should be united during the emergency. Furthermore, continuing it offers no assurance of early settlement. Even if it did, federal regulation under present wartime shortage of labor would lack competent men to enforce and effectuate its provisions on the hundreds of thousands of privately owned woodlands throughout the country. As the Association predicted, there

is now a critical shortage of men even to protect our forest resources from this summer's fires.

Every day since the beginning of the war, on the other hand, the need for wood in the successful prosecution of military operations has grown increasingly real and challenging. It is being called for in very large quantities and the bulk of it must be supplied from private forests by private industry. The government has placed that obligation upon industry and the industry thus far has met it. It must continue to meet it if humanly possible in such amounts as the war calls for. The day this is written, Donald M. Nelson, Chairman of the War Production Board, issued this appeal: "In order to meet the imperative and immediate needs of the War and Navy Departments and the Maritime Commission for construction lumber for the housing of the armed forces and for other essential war purposes, I urge all logging and sawmill operators and lumber industry employees throughout the United States immediately to inaugurate a full program of maximum production of all species of soft-wood lumber in common board, dimension, and structural timber sizes and grades. The situation is so critical that I ask your immediate cooperation and action."

It goes without saying that along with the above obligation the industry and its workers have the further public obligation of supplying the wood demanded with as little waste and destruction as possible of the forest resource under the emergency conditions they are called upon to meet. That the sudden stepping up of timber cutting to meet volume and delivery dates set by war agencies is intensifying waste and destruction in the forest is, of course, true. Some of the waste is due to specifications of the government, some to destructive cutting methods, some to inadequate protection against forest fires. Whatever the source, the fact remains that if our forests, our foresters and our forest industries are to do their most vital job in the war they must keep raw wood flowing to factories and military depots.

Bringing the national emergency, precipitated by events at Pearl Harbor, down to this forest perspective, the Directors of The American Forestry Association put into words their judgment of the major lines of sacrifice and action which would contribute most largely to the successful performance of this crucial job. They were realistic enough to know that waste of resources — from human life down to the smallest plant — is a corollary of war and that the quickest way to stop war's waste is to concentrate on doing those things that will end the conflict at the earliest possible date. That is the underlying purpose of their action and reading into it any other intent is unjustified and is befogging an issue that the Directors deemed so self-evident to all Americans as to need no elaboration or restatement of established Association policies.

HORSECHESTNUT

Aesculus hippocastanum, Linnaeus

BY G. H. COLLINGWOOD



In winter the tree is easily recognized by George J. Baetzhold
its symmetrical form and stout twigs which
turn upward at the ends

THE horsechestnut is a member of the Buckeye genus, *Aesculus*. It was introduced from Europe in the Eighteenth Century, and is a native of southern Asia, ranging from the Himalayan Mountains to northern Greece. A favorite shade tree in the Old World, it has spread in popularity in America and now appears as a planted ornamental tree in every state. Its popularity is well justified by its good form and floral display.

The leaves of the horsechestnut are from six to fifteen inches in diameter; the leaflets are four to eight inches long, extending palm-fashion from the end of a stout petiole which swells abruptly at the base. The slightly wavy margins of the leaflets are irregularly toothed and their upper surface is faintly wrinkled. Broader at the outer ends and terminating in an abrupt point, the leaflets taper toward the base, and at maturity are dark green above and paler beneath. In the fall they turn brown.

Showy, pyramidal flower clusters six to twelve inches high appear in June and July when the tree is in full foliage. The five petals are white, spotted with yellow and purple, and the long, curved stamens are yellow, extending far beyond the petals. The only other tree-sized buckeye bearing white flow-

ers is the California buckeye, and its natural range is limited to the slopes of the Sierras in California.

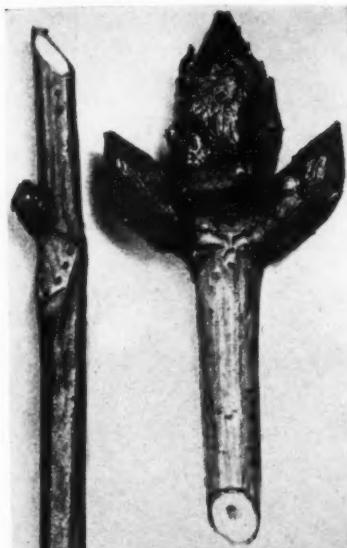
The fruit, ripening in September, consists of two or three reddish brown, smooth nuts, each bearing a whitish scar, and enclosed in a corky husk two or three inches in diameter covered with blunt spines. In the fall the husk turns brown, hard and leathery, and cracks into three segments to liberate the nuts. These are without economic importance in this country and so bitter as to be inedible without special treatment. Powdered dried nuts mixed with two parts of wheat flour and alum-water are said to make a vermin-repellent bookbinder's paste.

The horsechestnut may have acquired its common name from the legendary use of the fruit as a source of medicine for horses, or from the shape of the leaf scars which resemble the print of a horse's hoof. The name *Aesculus* is from the Latin for winter oak, and *hippocastanum* is a combination of two Latin words meaning "horse" and "chestnut."

The twigs are dotted with large lenticels or breathing pores, while the large reddish brown opposite buds are protected throughout the winter by a sticky shiny gum. The terminal flower buds are one-half to one inch long and below them on each side is a smaller leaf bud. The bud scales are arranged oppositely in pairs. Beneath each



Devereux Butcher
Large ascending limbs and spreading branches form a rounded crown of dense foliage



Twigs bear large terminal buds and smaller lateral ones, and have horseshoe-like leaf scars which aid identification



The showy, white flower clusters appear in June or July, and stand erect amid the large palmate leaves



Bark is thin, and on the lower trunks of old trees it is broken into flat scales by shallow fissures

Devereux Butcher

side bud is a large rounded V-shaped leaf-scar marked by seven prominent dark dots.

The lower branches droop slightly with tips upturned in candelabra fashion; the crown is rounded into a broad cone by ascending limbs with spreading lateral branches. The horse chestnut grows rapidly, often reaching a height of seventy feet and a diameter of three feet. Horticulturists have produced ornamental varieties of horse chestnut with peculiar characteristics such as double flowers and deeply cut leaves.

The flowers of the dwarf, *Aesculus pavia alba*, an ornamental tree, have an apparent toxic effect on the Japanese beetle, while an extract from the seeds of red buckeye, *Aesculus pavia*, will stupefy fish. The horse chestnut flowers and leaves are preferred foods of the Japanese beetle. Its leaves are also attacked by the caterpillar of the white-marked tussock moth, while the wood-boring larva of the leopard moth causes the twigs to wilt and break off. The oyster shell scale feeds on the sap through the young bark, but rarely are any of these attacks fatal.

The bark is dull brown or black, and on old trunks is thin, broken into large scales separated by shallow cracks or fissures. It has provided yellow dye material and tannin.

The wood weighs about thirty-five pounds to the cubic foot when air dry. It is white, soft and close-grained, but is not commercially important. In Europe and to a lesser extent in this country it is used for box-material, veneer, wooden ware, and artificial limbs and as a source of charcoal for gun powder.



Courtesy Homeyn B. Hough Company
Ripening in September, the fruit consists of two or three reddish brown nuts borne within a spined husk

YOUR SHADE TREES - WARTIME SPRAYING PRACTICES

By P. P. PIRONE

INSECT pests and fungus parasites of trees will not declare a truce while we are all engaged in the greatest war in history. Consequently, then, we must continue to combat tree pests, and must carry on the fight as best we can without impairing in any way our most important job — that of winning the war against despotism.

Users of insecticides and fungicides can help to further our prime national objective by being more economical with the various spray materials. Conservation of spray materials and equipment thus becomes a patriotic duty, inasmuch as many of their components,—steel, rubber, copper, sulphur, etc., are essentials in the war effort. Moreover, the supplies of several common insecticides, such as rotenone, though not used directly for war production, have been reduced either by the invasion of producing countries, or by lack of shipping space.

Here are a few ways to conserve our present supplies of fungicides and insecticides and at the same time effect control of tree pests. Incidentally, you can follow these same suggestions if you are of the many thousands of victory gardeners.

First, know what you are spraying for. Trees should not be sprayed unless a careful diagnosis reveals the presence of some pest that, left alone, might cause severe damage or even the death of the tree. Too often trees are sprayed because a certain pest or disease is believed to be present when actually some entirely different agent is responsible for the condition of the trees. In the halcyon past, trees sometimes were sprayed just to impress the neighbors with the good care given them, but in any wartime spraying program, such practices are unthinkable.

If spraying is adjudged to be necessary, be sure to use the proper material for the job at hand. Cases have been known of the use of arsenate of lead for sucking insects or as a disease preventive, and of nicotine sulphate for chewing insects. Such ignorance might be overlooked in peacetime, but there is no excuse for such waste of material and effort now.

Pay careful attention to proper dosage.

Good equipment, and the proper spray, — applied thoroughly at the right time, insures control of troublesome tree pests

Never use more than the manufacturer suggests. To ensure against severe pest or disease outbreaks and to compensate for inefficient methods of application, dosages recommended during peacetimes were larger than necessary. Rotenone dusts, for example, have been used at much greater strengths than 0.4 or 0.5 per cent. Yet, if directed at the young larval stage, dust of this concentration should give adequate control. Arsenate

of lead, the most common stomach poison for tree pests, will give good control when used at half the recommended concentration, provided it is applied when the grubs are young.

More important even than proper dosage is thoroughness of application. Contact sprays such as nicotine sulphate and oils are most effective when they actually cover the bodies of scales, aphids, and other sucking insects. Japanese beetle



sprays will kill or repel only when good coverage of the feeding areas is obtained. Because the Japanese beetle feeds principally on the upper surface of the leaf, most of the spray should be directed to that surface. Many other insects feed largely on the lower surface, and consequently the spray gun should be directed in such a manner as to ensure coverage of the undersides of the leaves.

Careful timing of spray applications likewise is necessary to ensure maximum control of pests. Arsenical sprays often are applied too long before the appearance of the pest, and so considerable amounts of the effective ingredients are washed off before they can be eaten. In other instances, the arsenicals have been applied too late—after most of the damage has been done, or just before the pest was through feeding anyway. It is well to bear in mind that much less arsenate of lead is needed and a shorter time interval is necessary to kill young canker worm larvae on shade trees than to destroy nearly mature ones.

From these suggestions it is obvious that an understanding of the life history of the pest to be combatted or the disease to be prevented is essential for the proper timing of sprays involves constant inspection. The heavy summer spray season is about to begin, spray operators might well spend a few hours in reviewing the literature, or in consulting a spray specialist on this subject. Too many spray jobs are governed by the calendar or by the scarcity of other tree work, and too little attention is given to timing. With but few exceptions, there can be no set schedule for spraying trees. Weather and biological factors beyond man's control or man's calendar largely govern the appearance of parasites. For this reason, proper timing of sprays involves constant inspection of the susceptible plant parts either by the arborist himself or by others intimatedly acquainted with tree pests.

Besides proper timing, one should consider the possibility of fewer applications. In some instances two spray applications at two-week intervals are only slightly less effective than three at ten-day intervals. The inclusion of stickers such as linseed or fish oil, or of deposit builders such as soap and soybean meal in arsenate of lead sprays will prolong the effectiveness of the less frequent applications. The efficiency of contact insecticides can be greatly increased by adding a wetting agent, thus making subsequent sprays unnecessary.

The necessity of a spray program must be determined largely by the severity of the pest or the disease involved in these times. For example, one can forego an extensive program to combat aphids on deciduous trees, since permanent harm rarely results from these pests. On the other hand, Japanese beetle or elm leaf

beetle infestations cannot be overlooked entirely, because of the severe damage that may accompany such attacks.

The last suggestion is to protect spraying equipment. "Care saves wear" applies equally well to spray machines as to automobiles. Clean out tanks and hose thoroughly when changing spray mixtures and before putting the equipment away for the night. This practice alone pays large dividends in better pest control, less injury to plants, and longer life for the equipment. Like automobiles, sprayers operated at lower speeds last longer than those used at higher speeds. Misuse destroys spray hose more rapidly than aging. Prevent kinks and avoid dragging the hose over rocks and other sharp surfaces.

Spray Substitutes

Besides conserving as many materials as possible, further help to the war effort may be effected by using materials less essential to our fighting forces. In recent years arborists have turned from homemade mixtures to ready-made copper fungicides. The present crisis may force manufacturers to discontinue preparation of ready-made fungicides, and tree men have to return to homemade sprays. Although bordeaux mixture,—copper sulphate and lime—has been the standard spray for most leaf diseases, it might be well to consider the use of a copper phosphate spray. This material has been tested by Dr. Robert H. Daines, of the New Jersey Agricultural Experiment Station, primarily for the control of cherry leaf spot, but it should do equally well for leaf-blotch of horse chestnut and other foliage diseases of shade trees. In addition, this spray has been found to have excellent repellent qualities against Japanese beetles.

To prepare a 2-2-50 bordeaux mixture, first add sufficient water to the spray tank to cover agitator paddles. Then place two pounds of copper sulphate powder (snow) in the screen at the tank opening and wash it through, while the agitator is running. Lastly, add two pounds of fresh hydrated lime slowly and bring up the volume to fifty gallons by adding water.

A 1-1-3-50 copper phosphate spray is prepared as follows: First rinse spray tank thoroughly to remove any lime residue from previous sprays. Add water to cover agitator paddles and one pound of copper sulphate in solution or as a powder. Slowly sift or wash one pound of trisodium phosphate through the screen. Keep the agitator paddles running vigorously and add more water. Finally sift in three pounds of fresh hydrated lime and add water to bring the total up to 50 gallons.

Remember to add the ingredients in the proper order; namely, first, copper sulphate; second, trisodium phosphate; and third, hydrated lime.

Though there appears to be no acute shortage of spray materials for the present season, research workers are engaged in developing substitutes in case a shortage should develop in the future. If copper sulphate becomes unavailable for spray purposes, we may have to turn to sulphur or organic compounds. Though less desirable for spraying shade trees, sulphur compounds will control most diseases and some pests, such as red spider mites. Several organic compounds also offer considerable promise as copper substitutes. Sodium dinitro-creosolate, sold under the trade name of Elgetol, has given good control of cedar rust on junipers in tests conducted by Dr. F. C. Strong, of the Michigan Agricultural Experiment Station. Another organic fungicide, tetramethyl thiram disulfide, sold under the trade names of DuBay 1205u, Thiurad and Tuads, has been found to be effective in controlling apple scab and several other leaf diseases, and doubtless these materials will soon be found effective in combatting many other leaf diseases.

THE QUERY CORNER

QUESTION: My plum and apple trees need spraying. I have also some young Scotch pines which are afflicted with "Red Spider." I just purchased a small pressure tank but need information on what to use in it. Can you help me?—Paul W. Hoffmann, Wauwatosa, Wisconsin.

ANSWER: Because fruit spray recommendations vary so in the different states, I suggest you write to the Department of Plant Pathology, Agricultural Experiment Station, Madison, Wisconsin, for spray schedules in your locality.

Red spider mite on Scotch pine and other narrow-leaved evergreens can be combatted either with oil or sulphur sprays. The former are apt to cause injury in inexperienced hands and so I favor the use of the latter. Lime sulphur spray, prepared by dissolving one part of concentrated lime sulphur in fifty gallons of water, will control mites. The spray should be applied on a warm day (75 to 85°) for best results, but not when the air temperature is above 90°. Lime sulphur solution cannot be used in close proximity to houses since it damages house paint.

QUESTION: What are some of the principal honey producing trees of the eastern states?—G. J. A., Maryland.

ANSWER: Bees are known to visit the blossoms of practically all trees, but with regard to their contributions of nectar the list would include tulip poplar, basswood, black locust, holly, tupelo gum, black cherry, sweet gum, and honey locust.

COL. AHERN,—SOLDIER-FORESTER, DIES

TAPS and the muffled drums have sounded for one of forestry's most colorful figures. George Patrick Ahern, Lieutenant-Colonel, U.S.A., and a pioneer in engineering, forestry and forest education, died at the home of his brother in Washington, D. C., on May 13th. "The Major"—as he was affectionately known to his host of friends—was buried with full military honors at Arlington National Cemetery on May 15th.

Born in New York, son of a pioneer in the New York labor movement, early in life he associated himself with various liberal activities. Always a progressive, Col. Ahern's long public career began in his eleventh year, when—in 1870—he landed in Tombs Prison, New York, as the result of some boyish crusade on behalf of a now forgotten cause.

He was graduated from the United States Military Academy at West Point in 1882 and entered the Infantry. One of his earliest assignments was that of secretary to Sitting Bull, the great Indian chieftain, who was then a Government ward and the target of world sympathy somewhat like that accorded in recent years to Mahatma Gandhi. Though Sitting Bull was highly educated and able to read both French and German as well as English, the bulk of his mail was so great that he had to have help in answering the thousands of letters.

In the Spanish American War Col. Ahern commanded an expedition to establish contact with the Cuban patriot, General Gomez, and, for landing his troops under fire at Tayabacao, June 30, 1898, he was cited for gallantry in action and awarded the Silver Star.

When the military government was established in the Philippines, Col. Ahern

organized the Bureau of Forestry in Manila, which he headed for fifteen years. In 1910 he realized a long-cherished dream of founding a forest school in the Philippines for, in the session of the Second Philippine Assembly, held early in the spring of 1910, he secured the passage of a bill which permitted him to establish a

forest schools in the Far East, comparing favorably with those in Japan, and in India and Burma,—which were established by the English.

His interest in forestry really dated from the time in 1890 when he made extensive explorations in wild, uncharted areas of Montana, which had never before been traveled by white men but which were later included in the territory mapped as Glacier National Park, and where the highest peak now bears his name. After winning a law degree at Yale University, Col. Ahern became professor of military tactics at Montana Agricultural College and, while there, he founded and taught the first forestry course ever given in the United States. A militant conservationist ever since, he counted among his close friends the leading foresters of the country, from Gifford Pinchot down to the late Chief Forester, Ferdinand Silcox. On the occasion of his seventy-fifth birthday, December 29, 1935, he was honored and presented with a book containing personal greetings from his hundreds of friends, in official and unofficial circles.

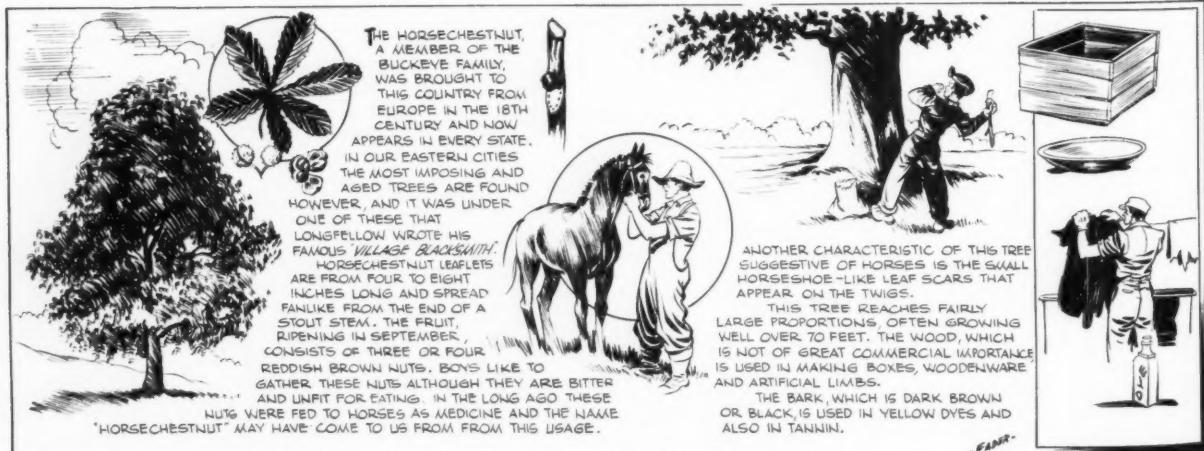
Retired from active service in 1906 as a major, Col. Ahern served many assignments after that. He wrote several books, including "Why the American Army Succeeded," "Forest Bankruptcy in America," "Deforested America," and an extensive report on Philippine woods. When he came back from the Philippines in 1915 he went on duty at the Army War College, serving as its Secretary in 1918, during World War I, and since then he has lived in Washington. Col. Ahern is survived by his widow, Mrs. Jean Gill Ahern, and a brother, Joseph E. Ahern.



Col. George P. Ahern

forest school in connection with the College of Agriculture of the Philippines. Buildings were erected and foresters detailed from the Bureau to give the technical courses. Associated with him on the staff were four professors and a native assistant in field methods. Located about thirty miles from Manila, it came to be recognized as one of the best second-grade

TREES AND THEIR USES—No. 65—HORSECHESTNUT





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for forest products have been filled from the beginning, without delay—without fear of diminishing supply.

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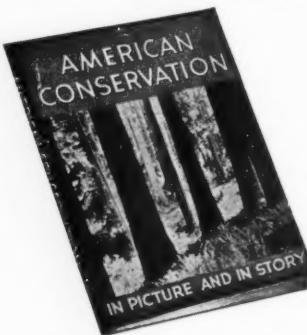
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AMERICAN CONSERVATION is the story of America—its land, its resources, its people. This book brings the story of conservation in America right up to the present day.

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Cloth Bound, size 12 x 8 3/4",
160 pages.

WPB Freezes Softwood Lumber at Mill

THE War Production Board on May 13 froze for a period of sixty days all sales and deliveries by large producers of softwood "construction" lumber, except to meet the needs of the Army, Navy, and Maritime Commission.

The order affects approximately seventy per cent of the country's softwood lumber production and applies particularly to timbers, framing items and boards commonly used in building construction. It leaves factory, shop and box lumber, and all hardwood lumbers free to move in the customary trade channels.

Stocks in retail yards, estimated to be approximately 7,000,000,000 feet, are sufficient to supply the essential civilian demands during the period the order is in force, the WPB Lumber and Lumber Products Branch said.

The order defines "construction lumber" as any sawed softwood lumber of any of several designated specifications, whether rough, dressed on one or more sides or edges, dressed and matched, shiplapped, or grooved for splines. It does not include any of the standard grades of factory lumber, shop lumber, or box lumber.

The definition of producer does not include sawmills which produced less than 5,000 feet, board measure, per average day of eight hours of continuous operation during the ninety days preceding May 13.

During the period of sixty days, producers may not sell, ship, or deliver any construction lumber except to or for the account of the Army, Navy, or Maritime Commission, or lumber which is to be physically incorporated into material which will be so delivered.

CCC Equipment Sought for Fire Emergency

WITH retrenchment in operations of the Civilian Conservation Corps, recommended by the President on May 4, the present forest fire emergency has created a demand for surplus CCC equipment all over the country.

Authority to loan or transfer surplus equipment to agencies other than the War Department was nullified by enactment of Public Law 371, December 23, 1941, authorizing the Bureau of the Budget to direct transfer of CCC surplus equipment to the war effort. On March 15, Budget Director Harold D. Smith directed CCC Director McEntee to transfer all surplus equipment to the War Department.

Large portions are being diverted to the Alaska highway, yet much surplus CCC equipment for which the War

Department has no use cannot be loaned to fire control agencies. On April 21, Representative Ramspeck, of Georgia, introduced H. R. 6976, to empower the CCC to distribute such surplus equipment to other agencies, including state foresters and forest fire control organizations. If enacted, this measure would ameliorate the present forest fire control emergency.

The President, on May 4, recommended to Congress that \$49,101,000 be appropriated to the Civilian Conservation Corps for the 1943 fiscal year, as compared with \$246,960,000 for the current year. Stressing forest fire protection, the President, in his budget message, said, "The protection and conservation of forest and other resources which are subject to sudden and violent destruction is the main purpose of the small nucleus of CCC camps provided for in this estimate."

Public Law No. 507 provides authority to use CCC enrollees to protect natural resources and war industries from the hazards of forest fires. It is expected that half the 600 existing CCC camps will be closed by July first and that by the end of September the number of camps will be scaled down to 150 with an average enrollment of 190 men per camp.

Volunteer Rural Fire Fighting Program

PLANS for developing fire fighting units in all farm and rural non-farm communities over the country to prevent and combat fire dangers, greatly aggravated by the war, were announced on May 15 by Secretary of Agriculture Wickard.

The program calls for making local surveys of farm and rural fire hazards, and a widespread educational program to assist rural people in eliminating and identifying fire hazards. Rural fire fighting companies of about ten farmers each on a community basis will be organized and trained in fire prevention and control. An inventory will be made of all fire fighting equipment and facilities, including water supplies on each farm and in each rural community, and provision made for their maintenance and accessibility.

This rural fire control program will be carried on by the Cooperative Extension Service of the Department of Agriculture and the state agricultural colleges through county agricultural and home demonstration agents, in cooperation with other federal, state, and local agencies.

This activity is part of a large scale emergency fire fighting program in which the Office of Civilian Defense is assuming leadership in cities and towns. The Forest Service of the Department is responsible for forest fire prevention and control, and other federal agencies are responsible for lands under their jurisdiction.



"You couldn't choose a better hero, lad, than the American frontiersman!"

The Dan Boone Tree still stands in Tennessee, a unique monument to a great American. Its inscription was carved almost two centuries ago by Daniel Boone himself.

Dan may have been a little weak on spelling, but he was strong on character. Frontier life developed in Americans the love of liberty, the self-reliance and the resourcefulness which constitute our greatest strength today. The sport of hunting has helped keep those qualities alive, generation after generation.

When Eliphalet Remington wanted a rifle, way back in 1816, he made it himself. It was such a good rifle that his neighbors asked him to make rifles for them. In this typically American way the Remington Arms Company came into being. For 126 years, Remington has been serving the sportsmen of this country, leading the way through research to ever better products. That research is responsible for the walloping power of Kleanbore Hi-Speed .22's and Nitro Express shotshells; the tremendous stopping power of Remington center-fire cartridges with the new Soft Point Core-Lokt bullet; the accuracy, sturdiness and reliability of Remington guns.



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FOR THE FUTURE . . . There is one thing which the sportsmen of this country can do now that will assure better hunting in the future. That is to support the cause of wildlife restoration in every possible way. This will ensure the opportunity to follow a rabbit hound across a frosty cornfield . . . to thrill to the explosive whir of a covey of quail . . . or to wait in a dawn-hushed blind for the beat of a mallard's wings. Remington Arms Company, Inc., Bridgeport, Connecticut.

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"Kleanbore," "Hi-Speed," "Nitro Express" are Reg. U. S. Pat. Off. "Core-Lokt" is a trademark of Remington Arms Co., Inc.

ANIMAL BEHAVIOUR, by J. A. Loeser. Published by the Macmillan Company, New York. Illustrated. 178 pages. Price \$2.00.

The views of Dr. Johann A. Loeser, formerly of the University of Berlin, relative to his studies and observations of animals and birds as creatures which feel and act as individuals, make interesting reading. In this volume, which is partly a translation of his original German work and supplemented by more recently acquired knowledge, Dr. Loeser expounds the theory that there is no such thing as instinct in animal behaviour and sets to work to prove his point.

CONSERVATION IN THE RURAL SCHOOL, 16 pages. Prepared by The Conservation Society of York County, York, Pennsylvania.

This booklet offers a brief course in conservation for the rural school teacher. It is written for teachers, but is so simply expressed that any child can understand it. In four lessons the following topics are presented: Conservation of bird and wild life, conservation of wild-flowers and wild flowering shrubbery, conservation of our forests, conservation of land and water.

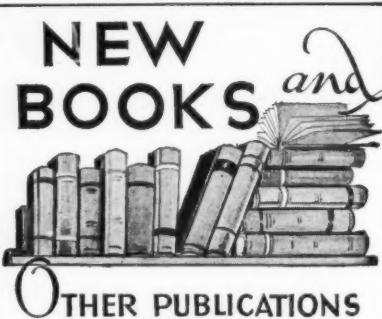
Though the course is brief, it contains suggestions for project work. It is the hope of the authors that teachers will enlarge the program.

PRUNING AND REPAIRING OF TREES, SHRUBS, AND ORNAMENTALS, by Victor H. Ries. Published by Doubleday, Doran and Company, Inc., New York City. Illustrated. 95 pages. Price \$1.00.

The small estate owner seeking practical methods for the care of his ornamental trees and shrubs will find this small volume of direct service. In it are chapters dealing with the pruning of shrubs, evergreens, hedges, roses and trees, with a special chapter devoted to pruning tools. The chapter on tree repair discusses the filling of cavities, care of tree wounds and methods of bracing.

LEGUMES FOR EROSION CONTROL AND WILDLIFE, by Edward H. Graham. 154 pages, ills. Superintendent of Documents, Government Printing Office, Washington, D. C. Price \$6.5.

The author, who is the Biologist of the Soil Conservation Service, describes in this interesting and practical little book the phenomenon of the interdependence of soils, vegetation and wildlife—now generally recognized and accepted. The drawings, prepared under the direction of Dr. Graham also, are the work of artists of the Soil Conservation Service.



A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

FORESTRY IN FARM MANAGEMENT, by R. H. Westveld and R. H. Peck. Published by John Wiley and Sons, Inc., New York City. Illustrated. 339 pages. Price, \$3.00.

This book, prepared by an eminent silviculturist and an able forester, is designed to aid farmers and agricultural educators in all sections of the United States in developing programs of timber growing and utilization practices on agricultural lands. Separate programs to conform with local soil and land types, habits and requirements of tree species to be planted, marketing, and other essentials must be worked out for individual farms to stabilize assets from farm-forest tree crops, and in this connection "Forestry in Farm Management" serves as a splendid basis for consultation.

OUR COMMON TREES—HOW TO KNOW AND USE THEM, by Hollis Howe. Mimeographed and illustrated with line drawings. 98 pages. Price 70 cents. Published by the Natural History Society of Maryland, Baltimore, Maryland.

Line drawings of typical leaves, blossoms, fruits and buds of many trees add helpful decoration to the mimeographed pages of Hollis Howe's "Our Common Trees—How to Know and Use Them." The tree groupings are evidently according to the author's interest rather than with strict reference to academic classifications, but the drawings serve as a supplementary index. Special emphasis is given the control of fungus and insect pests with suggestions, based on the author's long experience as Baltimore's City Forester.

While covering a wide variety of trees, this book is of special interest to residents of Baltimore, Maryland and vicinity. For their help the location is given of many named trees growing in the city.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

Fuel Wood Used in the United States 1630-1930, by R. V. Reynolds. U. S. For. Serv., Dept. Agr. Cire. 641. Supt. of Docs., Wash., D. C. Price 5 cents.

Vegetation Types and Forest Conditions of Douglas, Ormsby and Southwestern Washoe Counties, Nevada, by R. C. Wilson. For. Survey Release No. 2, Calif. For. and Range Exp. Sta., Berkeley, Calif.

Fungi Causing Decay of Living Oaks in the Eastern United States and Their Cultural Identification, by Ross W. Davidson, W. A. Campbell and Dorothy Blaisdell Vaughn. U. S. Dept. Agr., Tech. Bull. 785. Supt. of Docs., Wash., D. C. Price 15 cents.

The Naturalization of Roadbanks, by C. R. Hersh. Tech. Note 51, Appalachian For. Exp. Sta., Asheville, N. C.

State of California Forest and Fire Laws, 1940. Div. of For., Dept. of Natural Resources, Sacramento, Calif. Supervisor of Docs., 214 State Capitol, Sacramento, Calif.

A Contribution Toward A Bibliography on North American Fur Animals, by Lee E. Yeager. Illinois Nat. History Survey, Biol. Notes No. 16. Dept. of Registra. and Educa., Urbana, Ill.

Victory Gardens, by Victor R. Boswell. U. S. Dept. Agr. Misc. Pub. 483. Supt. of Docs., Wash., D. C. Price 5 cents.

Imperial Forestry Institute, Univ. of Oxford, Seventeenth Annual Report, 1941. The Holywell Press, Ltd., Oxford, England.

Thai Science Bulletin, April 1941. Dept. of Science, Ministry of Economic Affairs, Bangkok, Thailand.

Civilian Conservation Corps, Annual Report 1941. Federal Security Agency. Govt. Printing Office, Wash., D. C.

The Civilian Conservation Corps, The National Youth Administration and The Public Schools. Published by the Educational Policies Commission, 1201 Sixteenth Street, Washington, D. C. Price 25 cents.

Employment Possibilities in the Forest Service. Forest Service, U. S. D. A., South Bldg., Wash., D. C.

National Forest Reservation Commission 1941 Report. 77th Congress, 1st Session. Doc. No. 154. Govt. Printing Office, Wash., D. C.

Treatment of White Pines Infected With Blister Rust, by J. F. Martin and G. F. Gravatt. U. S. Dept. Agr., Farmers' Bulletin 1885. Supt. of Docs., Wash., D. C. Price 10 cents.

Birds of Southeastern United States In Relation To Agriculture, by F. E. L. Beal, W. L. McAtee and E. R. Kalmbach. Fish and Wildlife Serv., U. S. Dept. of Int., Cons. Bull. 15. Supt. of Docs., Wash., D. C. Price 10 cents.

Inter-American Conservation Treaty in Force

THE Inter-American Treaty on Nature Protection and Wildlife Preservation came into force on April 30, thus placing American conservation on a continental scale. Seven countries have ratified the treaty, three of them since the United States entered World War II on December 8, 1941. They are, in order of deposit of ratifications with the Pan American Union: the United States, Guatemala, Venezuela, El Salvador, Haiti, the Dominican Republic, and Peru. In accordance with the provision of the original convention between the American republics, that it "shall come into force three months after deposit of not less than five ratifications with the Pan American Union," the treaty became effective in the ratifying countries on April 30, three months after Haiti, on January 31, became the fifth country to deposit its ratification.

The original convention has been signed by representatives of eleven other Latin-American countries, leaving only three that have taken no action. Species of fauna and flora to be specially protected under the treaty have already been designated by addition to the convention for Argentina, Bolivia, Brazil, the Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua and the United States.

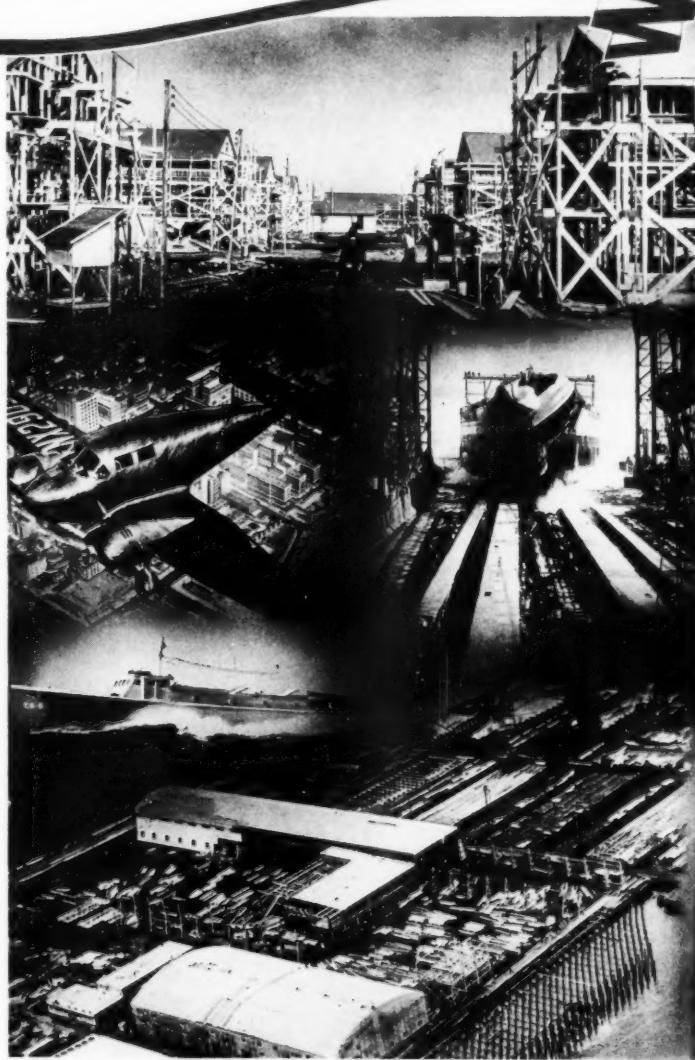
First official step towards realization of a Pan American program for nature protection was taken with the signing of the original convention in Washington, D. C., on October 12, 1940. Now that the second step is assured with the coming into force of the treaty, it remains for each ratifying country to fulfill its obligations by enacting enabling legislation and issuing executive orders or decrees to implement the treaty and effectuate its purpose.

The objects of the treaty are to protect and preserve native fauna and flora in the American republics, including migratory birds, and to protect and preserve scenery of extraordinary beauty, unusual and striking geologic formations, regions and natural objects of esthetic, historic, or scenic value. It provides for the establishment of national parks, national reserves, national monuments, and strict wilderness reserves.

NEW U. S. FIRE CHIEF

Appointment of Perry A. Thompson as chief of the U. S. Forest Service's Division of Fire Control has been announced. He succeeds Roy Headley, veteran forester, who retired from active duty in May. Mr. Thompson entered the Forest Service in 1911, and since 1939 has been chief of the Service's Division of Personnel.

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CONSERVATION IN CONGRESS

PROSPECTS for additional federal funds with which to meet the forest fire emergency this summer took an upward turn on May 13 when the Senate Committee on Appropriations reported out H. R. 6709, providing regular appropriations for the Department of Agriculture for the fiscal year beginning July 1, 1942. As recommended to the Senate, the bill provides an increase of \$5,500,000 over the amount approved by the House for emergency forest fire control. Of this increase \$2,500,000 is for use under the Clarke-McNary Act for cooperative protection of state and private lands; \$3,000,000 is for national forest protection.

Hope for Fire Control Funds

The increase for cooperative fire control on state and private lands brings that item up to a total of \$5,000,000, and if passed by the Senate and House will represent the largest amount ever appropriated for fire prevention work under the provisions of the Clarke-McNary Act. As this is written, the bill is being considered by the Senate. When passed by that body it will then go to a conference committee for adjustment of differences between the two houses. Indications are that the bill may be cleared and ready for the President's signature within a week.

The action of the Senate Committee on Appropriations in upping the House items for emergency forest fire control was due in large part to the efforts of a group of Senators and Congressmen backed by public pressure that adequate fiscal provision be made to protect war operations against disruption by forest fires this summer. When in March the Budget Bureau reduced the Departments of Agriculture and Interior estimates of the amount considered necessary from

\$19,665,000 to \$5,812,000, and the House cut it further to \$2,324,800, an effort was made to restore the full estimate in the Sixth War Powers bill. The Senate approved and passed the bill carrying the full estimate of \$19,665,000. The House refused to accept this figure, however, and a compromise was necessary on \$5,812,000. Efforts in the Senate were then turned to obtaining some of the additional funds needed through increases to forest fire control items in the regular Department of Agriculture Appropriation bill, with the results given above. If the House accepts the Senate increases, the total emergency funds that will be available for forest fire control will amount to approximately \$11,500,000.

Dutch Elm Disease

In reporting the Department of Agriculture Appropriation bill, the Senate committee also increased the House figure for continuing work by the Bureau of Entomology and Plant Quarantine in eradicating and controlling the Dutch elm disease. The House had depleted funds for this work as recommended by the Bureau of the Budget by cutting \$100,000 from the item for disease eradication and by wiping out completely funds for elm insect studies. The Senate committee restored \$50,000 of the first cut and provided \$15,000 for insect studies, so that the item for this work, as the bill now stands, amounts to \$406,475 for disease eradication and \$15,000 for studying insects which spread the disease.

Senator McCarran, of Nevada, recently introduced S. 2396 which would amend the Taylor Grazing Act so as to prohibit the Secretary of the Interior from making changes in grazing fees without consent of the district advisory board.

HEARTENING WORDS

"I have sent several letters to Congressmen thanking them for the valiant work they did in securing at least partial recognition of our fire problem. To The American Forestry Association is due the credit for the public pressure that made their efforts a success."

GEORGE H. CECIL,
Executive Secretary,
Conservation Association of Southern California.

April 27, 1942.

"It seems to me that AMERICAN FORESTS is rising to a two-fold responsibility and need. One is to keep the great national asset of trees in proper perspective so that exploitation for war needs may be intelligent. The other is the relaxation and refreshment through your pages, proving that in some respects at least this is a pretty good world after all."

RUTHERFORD PLATT,
New York City.

April 28, 1942.

CONSERVATION CALENDAR

Important Bills in Congress
With Action
April 20 - May 13, 1942

BILL ENACTED

H. R. 6868—CANNON, Missouri—Making additional appropriations for the national defense for the fiscal year ending June 30, 1942. Passed House March 28, 1942. Passed Senate, amended April 7, 1942. Signed by the President April 28, 1942. Public Law No. 528.

APPROPRIATIONS

H. R. 6430—WOODRUM—Independent Offices Appropriation bill for the fiscal year ending June 30, 1943. Passed House January 22, 1942. Passed Senate amended May 6, 1942. In conference May 7, 1942.

H. R. 6709—TARVER—Making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1943. Passed by the House March 13, 1942. Reported by the Senate Committee on Appropriations (Report No. 1323) May 13, 1942.

LANDS

H. R. 7003—ROBINSON, Utah—To provide for the acquisition of lands for inclusion in grazing districts. Introduced April 27, 1942. Referred to the Committee on the Public Lands.

NATIONAL HISTORICAL PARK

H. R. 5861—ROBINSON, Utah—Authorizing the transfer of jurisdiction of a portion of the Colonial National Historical Park at Yorktown, Virginia, from the Department of the Interior to the Department of the Navy. Introduced October 17, 1941. Passed House April 20, 1942.

NATIONAL PARKS

H. R. 4676—VINCENT, Kentucky—To accept the cession by the Commonwealth of Kentucky of exclusive jurisdiction over the lands embraced within the Mammoth Cave National Park. Passed House April 20, 1942. Referred to the Senate Committee on Public Lands and Surveys April 23, 1942.

H. R. 6657—JENNINGS—To authorize the acceptance of donations of land for the construction of a scenic parkway to provide an appropriate view of the Great Smoky Mountains National Park from the Tennessee side of the park. Passed House April 20, 1942. Referred to the Senate Committee on Public Lands and Surveys April 23, 1942.

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INDIAN FIRE PUMPS

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The impending dangers of forest fires is an immediately critical threat to our war efforts.

First, because in addition to normal forest fire hazards, sabotage by our enemies through widespread setting of forest fires, by aerial bombing and ground incendiary should be greatly guarded against at once.

Second, many sections of the country are not now adequately prepared against such a contingency and the danger is particularly acute.

Up to the present time, we have had no difficulty in filling all orders promptly, but we cannot foresee what the future will bring all orders for fighting forest, brush and grass fires.

If you contemplate the purchase of INDIAN FIRE PUMPS anytime this year, we urge you to write us immediately and let us know how many you will need.

Let's recognize the gravest forest fire emergency in the nation's history and be prepared for it.

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520 S. W. Pine St., Portland, Ore. Klamath Fall's, Ore.

A STATEMENT

To All Forest
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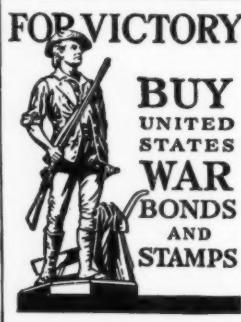
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THE FECHHEIMER BROS. CO.
Uniforms for Over 50 Years
CINCINNATI OHIO



On the Forest Fire Front

(Continued from page 249)

Oregon Green Guards, composed of teenage youngsters who are being organized in units right at home and given some training in the use of garden tools to deal with fire bombs, phosphorus leaves, or roadside fires, and particularly to scout and report such blazes."

Describing what has and is being done in the national forest field in California, S. B. Show, regional forester of the U. S. Forest Service, reports as follows:

"To meet the situation, the Forest Service has recruited for its regular protection organization all unemployed men available in the mountain and valley regions who have had necessary fire fighting experience. The supply of such men, however, proved far short of the number needed under war conditions. We have, therefore, had to turn to the universities, junior colleges and high schools for personnel to fill out our regular forces, and for emergency fire fighting forces. Enlistment is restricted to young men seventeen years of age or over, who are physically capable of doing rigorous fire fighting work. These men will be given intensive training in fire suppression and fire safety practices by selected Forest Service officers who have themselves received instruction in the training of recruits. It is estimated that from this pool of man-power we will be able to obtain 8,000 young men for fire duty under the leadership of experienced officers and fire fighters.

"Many other sources of man-power will be available during the fire season. The Rural Fire Volunteers, headed by the Director of the State Extension Service, has already enrolled more than 25,000 men primarily for protection of rural areas, but also available on call for forest fire duty. Conscientious objectors' camps will be able to supply some 500 men for fire line work. Delinquent youth camps have 1,500 young men, eighteen to twenty-five years of age, who are anxious to offer their services. The Minute Men of 1942, organized along military lines among the 250,000 sportsmen of the state for home guard duty, have expressed a desire to give active aid in fire protection. The Forest Defense Corps, sponsored by the California Department, American Legion, in cooperation with the Forest Service and State Division of Forestry, will form volunteer companies of able-bodied men, organized and trained for second or third line attack on fires, or behind-the-line jobs.

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A COMPREHENSIVE list of reading references forms an appendix to the book — AMERICAN CONSERVATION — In Picture and In Story.

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YOUTH, TREES AND GAME

(Continued from page 270)

The boys who do essential salvage jobs usually hand in reports, some of which are published in county papers. In one report, a boy related how he saved many wild duck eggs by leaving a strip of grass around a slough in the field where he mowed hay. Another tied tin around trees to keep cats from climbing to bird nests.

One especially interesting report was made by a boy in Dewey County. He told how dogs had chased a partridge off her nest, to which she failed to return. He

placed the twenty-eight eggs under a hen, hatched twenty-four, and raised them all. He released the birds on his own game project, fed and furnished them protected shelter in winter, and in a reasonable time had a larger stock of partridges on his farm than had ever been seen there before.

These 4-H Club youngsters the country over are trying to give forests and wildlife a decent break. Their efforts will eventually prove to be one of the greatest conservation developments of the day.

BIGHORNS ON THE MARCH

(Continued from page 253)

severe decimation. The first serious loss occurred about 1885, apparently from scabies caused by the psoroptic mite. In spite of this heavy loss, the herd had made a good recovery by 1923-24, when disease again almost destroyed it. A census shortly after this epidemic showed only a few sheep out of the several hundred that once composed the herd.

Records indicate that the herd steadily increased after the 1923-24 low. Studies and observations started in 1937 and carried on rather intensively in 1940 revealed particularly encouraging increases. Careful counts made in December 1940 showed that there were at least four hundred bighorns in the herd, and that the lamb survival was eighty per cent. The estimate at the beginning of 1942 is that the herd numbers about 500 sheep.

Thus, the Tarryall bighorn sheep herd casts a bright light on the rather discouraging bighorn picture. If the sheep in the Tarryalls can make such a comeback, there is reason to believe that other herds could make as good a recovery.

The question might be raised as to the reasons for the Tarryall herd being outstanding. The complete answer cannot be given, but there are some factors which stand out. Foremost, perhaps, is the fact that the sheep inhabit a suitable environment, where there are adequate yearlong food supplies and proper rock formations for cover and retreat. Predation appears to be light and poaching is well controlled. Moreover, the ranchers along Tarryall Creek have taken a great interest in the herd and in addition to keeping a watch for poachers, have sometimes reserved some of their pasture for the bighorns.

COLORADO—MELTING POT OF AMERICAN FLORA

(Continued from page 266)

the graceful leaves appear to replace the flower.

Equally loved are our Sand Lily and Easter Daisy. I call them both the Easter corsages of the plains. They love the sandy soil, so we find them in the lower zones. Both of these plants have an unusual plant system. The Sand lily is as white as white can be, and lies flat

like a six-petal star upon the earth. The Easter daisy, too, hugs the land very closely in a tight bouquet of little pale lavender daisies. The deer never fail to clip all the blossoms of my Sand lilies—when they've reached the right stage of saccharine sweetness—but I do not begrudge them this little Easter feast as they trail down the hillside, for they, too, be-

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- 4. Expansion of conservation education.**

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long here, and deserve as much care as do our wild flowers.

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A field of Pentstemons, for instance, is a wave of the richest blue. A Columbine, — our State flower — glimpsed through spruce and aspen looks like a dancing blue fairy. Indian Paint-brush is such a clear, clear red, one cannot believe it's real. And the Yuccas! How strange and stately they hold their candles of peace in our month of June! They herald the summer blooms, as does the delicate Mariposa lily, — poised like a butterfly on its slender stem — and our Shooting Star, so typical of

this unusual state. Yucca, also known as Spanish Bayonet, Bear Grass, Adam's Needle, and Soap Weed to the Indians, who use its root for soap. A little moth called "Pronuba" pollinates the Yucca. She carries the pollen from the stamen of one flower to the pistil of another and lays her eggs at base of pistil.

Here is a botanist's paradise. For those who seek, it holds all the wizardry of the plant world. For those who paint, all the colors of the palette; and for those who love a garden, an inspiration in landscaping and planting, the secret of which Nature alone knows. Come to the lovely hills and see our spring flowers. You'll say: So, that's how my Rocky Mountain rose grows! — Here's my Yellow wall-flower! — And here is the flowering currant — and pink honeysuckle! . . . Yes, one and all, between this 103d and 109th meridian. It is, indeed, America's wild-flower melting pot, brave pioneers, every one.

GRAND CANYON

(Continued from page 202)

the hotels—the El Tovar, named after another of Coronado's captains; the Bright Angel Lodge, named after the clear running stream in Bright Angel Canyon; and the Grand Canyon Lodge on the north rim. They want to know about the public campgrounds and the trailer accommodations.

They are curious about animals. Where are the mountain sheep? Are mountain lions fierce? Why do the park deer have such big ears? Where can they see a chuckwalla lizard? Why are there no bears at the Grand Canyon? They ask about the Indians—about the Navajos, the Hopis, the Havasupais.

They ask a thousand questions about the Grand Canyon. Why is it red? Where is Shiva Temple, and did the expedition up there find anything?

Yes, the three gentlemen of history would be amazed. The people who come to the Grand Canyon today are tremendously interested. The sentiment of the young Spaniard, that it is worth while to have lived just to see the Canyon, is not rare. One day a Missouri ear drew into the parking space at one of the observation points on the south rim. With real effort, two plainly dressed women managed to lift a badly crippled man out of the back seat. They carried him over to the stone parapet and held him up so that he might look down in the canyon. After several moments of intense interest his mouth widened into a broad smile. "Gosh! It's wonderful!" he exclaimed.

Don Lopez and the trapper and explorer might be all the more amazed if they knew that most Grand Canyon visitors are not members of the leisure classes who are supposed to have a monopoly on the

appreciation of wonderful things. A good proportion of visitors are scrubbers of floors and wringers of clothes and men who sell groceries and ladies' shoes.

They are the practical people of the earth. They crowd into the lectures which the ranger-naturalists give on geology and archaeology and history. They throng the campfire talks to hear about birds and reptiles and the prehistoric Indians of the Grand Canyon country. A hundred times a day they say to one another, "This is a wonderful place."

They go away feeling better. They're not quite so worried. They're not quite so rushed. They feel more peaceful, more relieved. At the Grand Canyon they have looked out upon one of the truly sublime spectacles of the earth against which time in the ordinary mortal sense is sheer nonsense. What is time in the face of five hundred million years?

The Grand Canyon of the Colorado is wonderful. Best of all, it's unspoiled. Oh, there are hotels, there is running water, there are paved roads and well-kept trails and good accommodations for every kind of traveler. But the primitive wilderness still is there. The river still thunders and roars in the lonely glens where no one ever ventures. The big pines murmur and the tawny lion still leaps over fallen logs and lichen-crusted rock. The "horrid mountains" still are there, solitary, sublime, unapproachable. Even the busy beaver, wished for by James Ohio Pattie, still plies his peaceful, harmless trade.

The men of history are gone. They were unimpressed. The story is different today. New travelers come, new discoverers, new explorers. They stand on the rim and look. "Gosh!" they say. "It's wonderful!"

CANADA'S PULPWOOD BACKS THE ALLIES

(Continued from page 259)

from Canada it would not be a machine shortage, but shortage of raw materials due to lack of men to cut pulpwood in the bush. Some operators planned to work until the spring thaw, then return their men to the bush just as soon as woods conditions permit. Fewer men in that way will produce more pulpwood.

Canada's pulp and paper industry since 1920 has headed all Canadian commodities in net value of production. Since 1922 it has ranked first in wage and salary distribution. Between 1925 and 1935, it was first in gross value of production, but was overtaken by the smelting and refining group of non-ferrous metals. Pulp and paper records were set in 1940, when gross and net values, costs of materials and supplies, persons employed, and salaries and wages all exceeded figures of any previous year.

Paper-making in Canada goes back to 1803, when the first paper mill was built at St. Andrews, Quebec, then known as Lower Canada. Upper Canada, now Ontario, entered the industry in 1813 when the first mill was established near Hamilton. In 1819, the Maritime Provinces started paper-making with a mill at Bedford Basin, near Halifax. Paper made before 1860, however, was mostly from rags. Wood pulp was not used in Canada until after the Civil War.

In 1866, Alexander Buntin installed a machine at Valleyfield, Quebec, that is claimed to be the first wood-grinder in America. Wood pulp was manufactured by the mechanical process. In that same year, Angus Logan and Company built a chemical mill to produce wood pulp at Windsor Mills, Quebec. Canada's pulp and paper industry developed rapidly thereafter. In 1885, Charles Riordan started Canada's first sulphite mill, at Merriton, in the Niagara Peninsula. North America's first mill to manufacture chemical pulp by the sulphate process, according to the Canadians, was established in 1907 by the Brompton Pulp and Paper Company at East Angus, Quebec.

French-speaking Quebec, therefore, is credited with starting the Canadian pulpwood and paper industry. Through the years it has maintained leadership among the nine Provinces. In 1940, Quebec produced fifty-three per cent of Canada's total of 8,499,922 rough cords of pulp-

wood, compared to twenty-five per cent by Ontario, seven per cent by British Columbia and fifteen per cent by the other Provinces. And Quebec supplied fifty-three per cent of Canada's paper.

Wartime pulp and paper production has increased in all major fields. Newsprint, of course, remains by far the largest unit. Makers of fine papers have increased production despite wartime restrictions and labor shortages. Paper board production has shown large increases each year of the war. This is also true of wallboard. Wrapping paper in 1940 totaled 139,716 tons, an increase from 109,907 tons in 1939, while the 1941 increase was about twenty-three per cent higher than in 1940. Nearly every mill in Canada is taking part in the machine shop production of "bits and pieces" for vital machines of war.

Will Americans suffer a pulpwood and paper shortage because Canada, in her third year of war, is called upon to supply so much to so many?

Naturally, no one can foresee war developments or know just what effect they may have on future production of pulpwood and paper. Canadian and United States sources of information make it possible, however, to draw a fairly encouraging summary of the present situation. Pulp and paper officials of Canada and the United States are cooperating in an effort to assure adequate supplies for normal needs at stable prices.

Efforts are being made to conserve paper. Some Government agencies are using both sides of sheets and single-spacing their typewritten pages. This practice may well increase. Newspapers and magazines are insisting that their writers say much in few words.

American publishers have been advised that the situation, as I write this, is not one to cause alarm. Several factors are working automatically toward conservation of newsprint. Margins are being narrowed in some publications, thereby saving paper. Advertising space may decline because of war restrictions, thereby saving more paper. Newspaper circulation, which reached an all-time high in 1941, may be somewhat reduced during the remainder of the war because of restrictions on delivery trucks, tires and gasoline. This, too, would save paper.



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Newsprint mills reached almost capacity production of newsprint and special war papers in 1942. Canadian officials told me that newsprint will probably be the last of all papers to suffer restrictions, unless the Governments undertake outright rationing. Canada's source of supply is almost unlimited; the major problem is to get enough men to cut pulpwood in the bush.

Hydro-electric power also has presented an unexpected problem to the newsprint industry. Early in April the Canadian Government is reported to have told United States authorities that they might eventually have to choose between more aluminum and their present supply of newsprint, because Canada does not have enough available hydro-electric power to spur the aluminum industry, supply more power to New York State and maintain the present production of newsprint. Canada's supply of newsprint may rest in large measure, therefore, on the decision of the United States War Production Board.

Better quality papers are more likely to be affected because chemicals are needed for munitions. Several Canadian firms, however, are now producing for domestic consumption papers formerly imported. This leaves larger quantities of these papers in the United States for home use. Canada is also rapidly developing her chemical industries, so there may be enough chemicals for the vast munitions production and for fine papers.

Canada's rigorous price and wage ceilings are likely to control production costs, but prices of Canadian products in the United States are being set by the United States Office of Price Administration. Unless this established price on newsprint helps offset increased Canadian manufacturing costs, however, more Canadian firms may convert production to other papers and thereby reduce their newsprint supply to the United States.

Canadians naturally were disappointed by this action. "Canadian newsprint makers have been awakened by an OPA ruling to the fact that their goodwill programme may not pay off," remarked a writer in *The Financial Post* of Toronto.

"Since the goodwill policy began, relations between paper maker and publisher have been better than ever before," he explained. "Frequent opportunities for raising newsprint prices have been allowed to pass in the belief that when and if prices had to go up, there would be a reasonable attitude on both parts." Despite rising costs, increased transportation charges and decidedly higher taxes, he added, newsprint mills had maintained

their price level until "at the end of last year the time came when a price increase seemed essential."

"The American Newspaper Publishers Association took no stand against the proposed price increase," *The Financial Post* writer explained. "Individual buyers appeared to recognize the fairness of the industry's policy." Because of the OPA action, he added, "relations between the Canadian newsprint manufacturer and the American publisher have received a serious setback."

Transportation difficulties because of tremendous war freight demands are another factor that cannot be entirely foreseen. Ship shortages are more likely to occur than rail shortages. If this does reduce overseas exports of pulp and paper, that will leave larger quantities for North American consumption. Possible freight car shortage is being forestalled. While war shipments are sharply increasing, civilian shipments are declining. Besides, the United States expects to have available this spring some 36,000 new freight cars and more than 900 new locomotives. Speed in loading and unloading freight cars is reducing time in handling pulpwood, wood-pulp or paper.

Stabilized buying will do much to assure continued supplies of newsprint and other papers. Canadians tell me that one of the major factors in creating the threatened crisis early in 1942 was an effort of some would-be pulpwood and paper hoarders to buy over-large amounts that diminished the supply, while offering high prices that threatened to wreck the existing price structure. Regulations are now pending on both sides of the border that may make equalized monthly buying mandatory at fixed prices.

Canada's pulp and paper industry is setting a magnificent example in wartime production. Fewer men are doing more work. Executives facing increased problems within the industry are, nevertheless, taking on heavy administrative obligations in the Government. Machines designed to make newsprint are doing their job, then turning out vast quantities of essential war papers. Machine shops established to service mill machinery are carrying out that task, then utilizing their facilities and skilled workmen to help equip armed forces for mechanized warfare.

Men producing the pulpwood and paper of Canada are supplying presses of the fighting democracies with pages on which to print the story of Freedom's valiant efforts to win the war—a story that will provide knowledge, wisdom and insight with which to win the peace.

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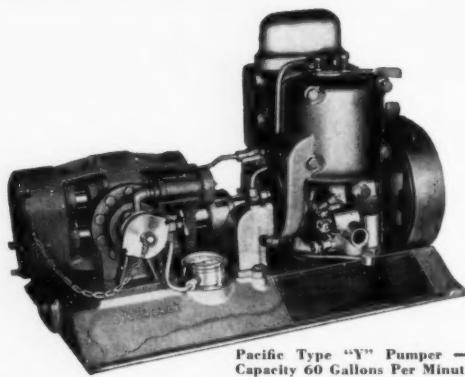


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